

(19)



Europäisches Patentamt

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(11)

EP 0 480 659 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
04.09.1996 Bulletin 1996/36

(51) Int. Cl.⁶: **A61K 31/415**, **A61K 31/44**

(21) Application number: **91309176.5**

(22) Date of filing: **07.10.1991**

(54) **Use of Angiotensin-II antagonists for the manufacture of a medicament for the treatment of hyperuricemia**

Verwendung von Angiotensin-II-Antagonisten zur Herstellung eines Arzneimittels zur Behandlung von Hyperuricemie

Utilisation d'antagonistes de l'angiotensine-II pour l'obtention d'un médicament destiné au traitement de l'hyperuricémie

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB IT LI LU NL SE

(30) Priority: **08.10.1990 JP 270214/90**

(43) Date of publication of application:
15.04.1992 Bulletin 1992/16

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(56) References cited:

- **THE JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS**, vol. 252, no. 2, 1990, pages 726-732, The American Society for Pharmacology and Experimental Therapeutics, US; P.C. WONG et al.: "Nonpeptide angiotensin II receptor antagonists. IX. Antihypertensive activity in rats of DuP 753, an orally active antihypertensive agent"
- **DRUG NEWS & PERSPECTIVES**, vol. 3, no. 6, July 1990, pages 337-351; A.L. JOHNSON et al.: "Nonpeptide angiotensin II receptor antagonists"
- **THE AMERICAN JOURNAL OF MEDICINE**, vol. 44, no. 3, March 1968, pages 359-365; T. F. FERRIS et al.: "Effect of angiotensin and norepinephrine upon urate clearance in man"
- **JOURNAL OF THE AMERICAN GERIATRICS SOCIETY**, vol. 26, no. 6, June 1978, pages 241-247; I. SAITO et al.: "Serum uric acid and the renin-angiotensin system in hypertension"
- **BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS**, vol. 165, no. 1, 30th November 1989, pages 196-203, Academic Press, Inc.; A.T. CHIU et al.: "Identification of angiotensin II receptor subtypes"
- **HYPERTENSION**, vol. 15, no. 3, part 2, June 1990, pages 841-847; J.P. KOEPKE et al.: "Central and peripheral actions of a nonpeptidic angiotensin II receptor antagonist"

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- MEDIZINISCHE KLINIK, vol. 69, no. 14, 5th April 1974, pages 599-606; F. WESSELS et al.: "Untersuchungen zur Genese der hyperurikämie bei essentieller hypertonie"

- Monthly Index of Medical Specialities, May 1995, page 138
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Description

BACKGROUND OF THE INVENTION

5 It is considered that when uric acid content in blood exceeds a certain limit, uric acid would deposit as sodium urate and deposition of sodium urate on the articular cavity or kidney would cause gout, renal disorders or vascular disorders. As known causes of hyperuricemia, there are reduced excretion of uric acid, excessive production of uric acid, abnormality of purine metabolizing enzyme, disease associated with hematopoietic organ or renal disorders, administration of chemicals such as pyrazinamide or thiazide, and the like. Irrespective of any cause, continuous hyperuricemia results in incidence of gout in most cases and if further worsened, leads to renal insufficiency or cardiovascular disorders. Further in the case of children, a disease called Lesch-Nyhan syndrome which is caused by excessive production of uric acid due to enzyme abnormality is known.

Since these diseases are caused by high blood concentration of uric acid, drugs having an activity of excreting uric acid, for example, probenecid, sulfinpyrazone or benzbromarone have been used for the treatment of hyperuricemia.

15 Ferris and Gorden in The American Journal of Medicine, (March 1968) vol. 44, no. 3, pages 359-365 reported that intravenous administration of angiotensin and norepinephrine caused a marked reduction in clearance of urate. Saito *et al* in the Journal of the American Geriatrics Society reported that there is a correlation between serum uric acid concentration and plasma renin activity and hence the renin-angiotensin system.

The present invention provides compounds having excellent properties as agents for the treatment of hyperuricemia.

DETAILED DESCRIPTION OF THE INVENTION

As a result of extensive investigations to solve the foregoing problems, the present inventors have found that a series of non-peptide type compounds having an angiotensin II receptor-antagonizing activity are useful for the prevention or treatment of hyperuricemia. The present invention has thus been accomplished.

That is, the present invention relates to compositions for the prevention or treatment of hyperuricemia comprising a non-peptide type compound having an angiotensin II receptor-antagonizing activity.

The non-peptide type angiotensin II receptor antagonists which are used in the present invention may be any compounds as long as they are compounds which do not fall under the category of compounds formed by binding two or more amino acids through peptide bond (-COHN-) and have an antagonizing activity against angiotensin II receptor. As non-peptide type compounds having such an action of antagonizing an angiotensin II receptor, compounds described in, for example, the following publications, may be given:

- 35 (a) Andrew T. Chiu *et al.*
The Journal of Pharmacology and Experimental Therapeutics, 247, 1-7 (1988)
- (b) Andrew T. Chiu *et al.*
European Journal of Pharmacology, 157, 13-21 (1988)
- (c) Andrew T. Chiu *et al.*
40 European Journal of Pharmacology, 170, 117-118 (1989)
- (d) Pancras C. Wong *et al.*
Hypertension, 13, 489-497 (1989)
- (e) Andrew T. Chiu *et al.*
Biochemical and Biophysical Research Communications, 165, 196-203 (1989)
- 45 (f) Pancras C. Wong *et al.*
The Journal of Pharmacology and Experimental Therapeutics, 250, 515-522 (1989)
- (g) Andrew T. Chiu *et al.*
The Journal of Pharmacology and Experimental Therapeutics, 250, 867-874 (1989)
- (h) Andrew T. Chiu *et al.*
50 The Journal of Pharmacology and Experimental Therapeutics, 252, 711-718 (1990)
- (i) John O. Koepke *et al.*
Hypertension, 15, 841-847 (1990)
- (j) Edwin K. Jackson *et al.*
Life Science, 46, 945-953 (1990)
- 55 (k) John V. Duncia *et al.*
Journal of Medical Chemistry, 33, 1312-1329 (1990)
- (l) David J. Carini *et al.*
Journal of Medical Chemistry, 33, 1330-1336 (1990)

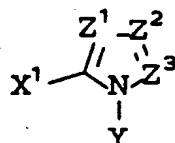
- (m) Pancras C. Wong et al.
Hypertension, 15, 823-833 (1990)
- (n) R. S. L. Chang et al.
Molecular Pharmacology, 29, 347-351 (1990)
- (o) Alexander L. Johnson et al.
Drug News and Perspectives, 3, 337-351 (1990)

In addition, compounds disclosed in the following patents may also be given as examples of the non-peptide type compounds having an angiotensin II receptor-antagonizing activity which can be used in the present invention.

- (1) Japanese Patent Application Laid-Open No. 54-148,788
- (2) Japanese Patent Application Laid-Open No. 56-71,073
- (3) Japanese Patent Application Laid-Open No. 56-71,074
- (4) Japanese Patent Application Laid-Open No. 57-98,270
- (5) Japanese Patent Application Laid-Open No. 58-157,768
- (6) Japanese Patent Application Laid-Open No. 62-240,683
- (7) Japanese Patent Application Laid-Open No. 63-23,868
- (8) Japanese Patent Application Laid-Open No. 1-287,071
- (9) European Patent Laid-Open No. 324,377
- (10) U.S. Patent No. 4,880,804
- (11) U.S. Patent No. 4,916,129
- (12) Japanese Patent Application No. 2-138,653

Among the compounds disclosed in the patents supra or described in the publications supra, a group of preferred compounds and preferred examples are shown below.

A group of compounds preferred as the non-peptide type compounds having an angiotensin II receptor-antagonizing activity which are the effective ingredient of the composition for the prevention or treatment of hyperuricemia are represented by general formula (I) below.



(I)

Herein each of Z¹, Z², and Z³, independently represents:

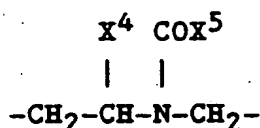
nitrogen atom,
a group represented by general formula: =C(X²)-or,
a group represented by general formula: =C(X³)-; each of X¹, X², and X³ independently represents:

hydrogen,
hydroxy,
mercapto,
halogen,
formyl,
carboxyl,
carbamoyl,
methoxycarbonyl,
ethoxycarbonyl,
an alkyl group having 1 to 10 carbon atoms (wherein the alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, halogen, carboxyl, methoxycarbonyl, ethoxycarbonyl, methoxycarbonylamino, cyano, carbamoyl, acetox, acetamido, mercapto, methylthio, ethylthio, phenyl and tetrazolyl),
an alkenyl group having 2 to 5 carbon atoms (wherein the alkenyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, carboxyl, methoxycarbonyl and ethoxycarbonyl),
alkynyl having 2 to 5 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, thienyl, or phenyl (wherein the phenyl may be substituted with 1 to 3 substit-

uents selected from the group consisting of hydroxy, halogen, methoxy, ethoxy, n-propoxy, n-butoxy, mercapto, methylthio, ethylthio, n-propylthio, n-butylthio, methyl, ethyl, n-propyl, isopropyl, n-butyl, nitro, amino, methylamino, dimethylamino, ethylamino, diethylamino, n-propylamino, n-butylamino, phenyl, phenoxy, benzyl, benzyloxy, carboxyl, methoxycarbonyl, ethoxycarbonyl and carbamoyl);

when Z^2 and Z^3 represent a group of general formula: $=C(X^2)-$ or a group of general formula: $=C(X^3)-$, X^2 and X^3 may be combined together to form:

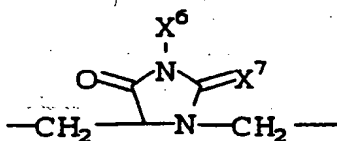
a group represented by general formula:



(wherein X⁴ represents carboxyl, carbamoyl, formyl, cyano or hydroxymethyl, and X⁵ represents fluorenyl, phenyl(methyl)amino, cyclopropylmethyl, cyclopentylmethyl, cyclohexylmethyl, cyclohexyl-(phenyl)methyl or benzhydryl;

(wherein the phenyl in benzhydryl may be substituted with a substituent selected from the group consisting of halogen, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, amino, methylamino, dimethylamino, ethylamino, diethylamino, methyl and ethyl):

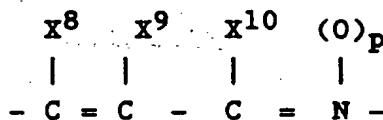
a group represented by general formula:



(wherein X⁶ represents alkyl having 1 to 4 carbon atoms or phenyl);

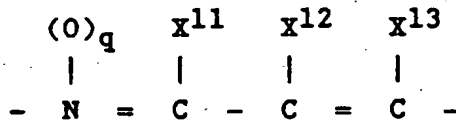
(wherein the phenyl may be substituted with 1 or 2 substituents selected from the group consisting of halogen, methyl, ethyl, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, amino, methylamino, dimethylamino, ethylamino and diethylamino; and X⁷ represents an oxygen atom or sulfur atom);

a group represented by general formula:



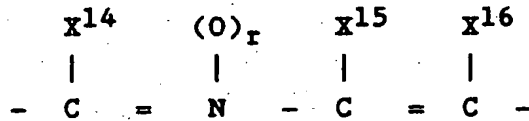
(wherein each of X⁸, X⁹ and X¹⁰ independently represents hydrogen, alkyl of 1 to 6 carbon atoms): (wherein the alkyl group may be substituted with hydroxy, amino, mercapto, methoxy, methylthio, carboxyl, carbamoyl, acetylamino or acetoxyl); alkoxycarbonyl group having 2 to 5 carbon atoms, halogen, cyano, carboxyl, carbamoyl, acetyl, amino, mono- or dialkylamino having 1 to 6 carbon atoms which may be substituted with an amino, pyrrolidinyl, piperidino, piperazino, morpholino, thiomorpholino, triazolyl, tetrazolyl, trichloromethyl, tribromomethyl, trifluoromethyl or phenyl (wherein the phenyl may be substituted with methyl, ethyl, methoxy, ethoxy, hydroxy, methylthio, ethylthio, mercapto, carboxyl and cyano); and p represents 0 or 1);

a group represented by general formula:



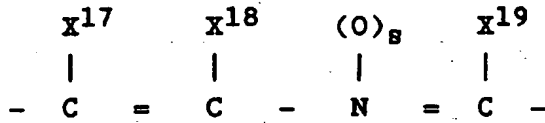
(wherein each of X^{11} , X^{12} , and X^{13} independently has the same significance as X^8 , X^9 or X^{10} , and q has the same significance as p);

a group represented by general formula:



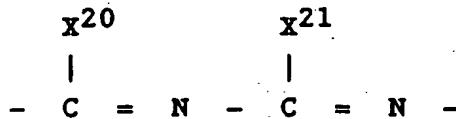
(wherein each of X^{14} , X^{15} and X^{16} independently has the same significance as X^8 , X^9 or X^{10} , and r has the same significance as p);

a group represented by general formula:



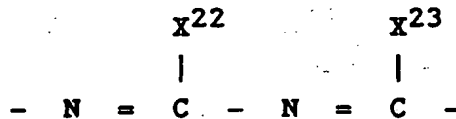
(wherein each of X^{17} , X^{18} and X^{19} independently has the same significance as X^8 , X^9 or X^{10} , and s has the same significance as p);

a group represented by general formula:



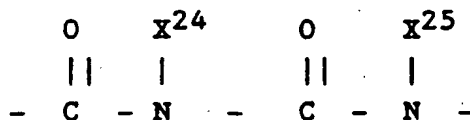
(wherein each of X^{20} and X^{21} independently has the same significance as X^8 , X^9 or X^{10});

a group represented by general formula:



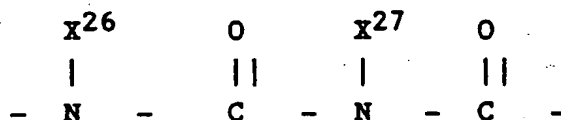
(wherein each of X^{22} and X^{23} independently has the same significance as X^8 , X^9 or X^{10});

a group represented by general formula:

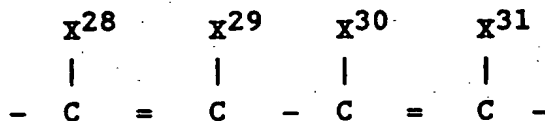


(wherein each of X^{24} and X^{25} independently represents hydrogen or alkyl of 1 to 4 carbon atoms (wherein the alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, methoxycarbonyl, carboxyl, ethoxycarbonyl and carbamoyl));

a group represented by general formula:



(wherein each of X^{26} and X^{27} independently has the same significance as X^{24} and X^{25}); or,
a group represented by general formula:

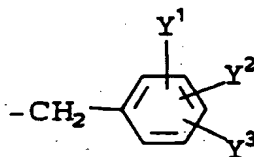


(wherein each of X^{28} , X^{29} , X^{30} and X^{31} independently represents hydrogen, an alkyl group having 1 to 4 carbon atoms (wherein the alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, carboxyl, methoxycarbonyl, ethoxycarbonyl, carbamoyl, acetyl, acetoxo, acetamido and halogen), halogen, a perfluoroalkyl group having 1 to 6 carbon atoms, carboxyl, carbamoyl, cyano, formyl, methoxy, ethoxy, propoxy, methoxycarbonyl or ethoxycarbonyl);

Y represents:

phenethyl,
cyclohexylethyl,
adamantylethyl,

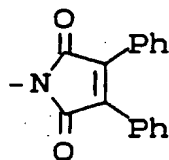
or a group represented by general formula:



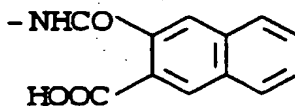
(wherein each of Y^1 and Y^2 independently represents:

hydrogen,
halogen,
nitro,
carboxyl,
amino,
cyano,
formyl,

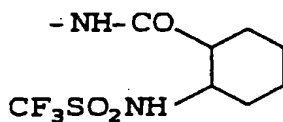
hydroxyiminomethyl,
trifluoromethylsulfonylamino,
trifluoroacetylamino,
an alkoxy group having 1 to 4 carbon atoms,
an alkyl group having 1 to 4 carbon atoms,
carboxymethyl, tetrazolymethyl,
a group represented by formula:



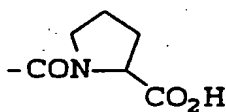
a group represented by general formula: $\text{-NHCO(CH}_2\text{)}_t\text{COOH}$
(wherein t represents 1 to 3);
a group represented by formula: $\text{-NHCOCH=CH-CO}_2\text{H}$;
a group represented by formula: $\text{-NHCOCH}_2\text{CH(Ph)CO}_2\text{H}$;
a group represented by formula: $\text{-NHCOCH(Ph)CH}_2\text{CO}_2\text{H}$;
a group represented by formula



a group represented by formula:

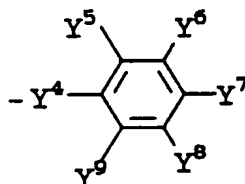


a group represented by formula: $\text{-CONHCH(Ph)CO}_2\text{H}$;
a group represented by formula:



a group represented by formula:
 $\text{-NHCOC(Ph)=C(Ph)CO}_2\text{H}$;
phthalimido;
benzyloxy;
a mono- or dialkylamino having 1 to 4 carbon atoms;

acetoxyl; or,
 propionyloxy;
 Y^3 represents:
 hydrogen; or,
 a group represented by general formula:



(wherein Y^4 represents a single bond; oxygen; sulfur; carbonyl;
 a group of formula: $-NH-$;

a group of formula: $-CH=CH-$

a group of general formula: $-N(Y^{10})CO-$ (wherein Y^{10} represents hydrogen, methyl or phenyl);

a group of general formula: $-CON(Y^{11})-$ (wherein Y^{11} represents hydrogen, methyl or phenyl);

a group of formula: $-CH_2HH-$;

a group of formula: $-NHCH_2-$;

a group of general formula: $-CH_2-Y^{12}-$ (wherein Y^{12} represents oxygen or sulfur);

a group of general formula: $-Y^{13}-CH_2-$ (wherein Y^{13} represents oxygen or sulfur); or

a group of formula: $-NHCONH-$;

each of Y^5 , Y^6 , Y^7 , Y^8 and Y^9 independently represents an alkyl group having 1 to 4 carbon atoms, halogen, carboxyl, carbamoyl, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, sulfo, sulfamoyl, nitro, trifluoromethanesulfonylamino, methanesulfonylamino, benzenesulfonylamino, 4-chlorobenzenesulfonylamino, acetaminosulfonylmethyl, methoxycarbonyl, ethoxycarbonyl, propyloxycarbonyl, amino, formyl, phospho, phosphono or cyano).

Herein, terms used in the description on the group of preferred compounds are specifically explained.

The halogen atom refers to fluorine atom, chlorine atom, bromine atom or iodine atom.

The alkyl group having 1 to 10 carbon atoms refers to a straight or branched alkyl group having 1 to 10 carbon atoms, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, n-hexyl, isohexyl, n-heptyl, n-octyl, n-nonyl, n-decanyl or the like.

The alkenyl group having 2 to 5 carbon atoms refers to straight or branched alkenyl group having 2 to 5 carbon atoms, for example, vinyl, 1-methylvinyl, 1-propenyl, 2-methylpropenyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-pentenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 3-methyl-1-butenyl, 3-methyl-2-pentenyl, or the like.

The alkynyl group having 2 to 5 carbon atoms refers to a straight or branched alkynyl group having 2 to 5 carbon atoms, for example, ethynyl, 1-propynyl, 2-propynyl, 1-butylnyl, 2-butylnyl, 3-butylnyl, 3-methyl-1-propynyl, 3-methylbutynyl, 1-pentylnyl, 2-pentylnyl, 3-pentylnyl, 4-pentylnyl, or the like.

The alkoxy group having 1 to 4 carbon atoms refers to an alkoxy group, for example, methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, tert-butoxy, or the like.

The alkylthio group having 1 to 4 carbon atoms refers to an alkylthio group, for example, methylthio, ethylthio, n-propylthio, isopropylthio, n-butylthio, isobutylthio, tert-butylthio, or the like.

The alkyl group having 1 to 6 carbon atoms refers to a straight or branched alkyl group having 1 to 6 carbon atoms, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, n-hexyl or the like.

The mono- or dialkylamino group having 1 to 6 carbon atoms refers to a mono- or dialkylamino group, for example, methylamino, ethylamino, n-propylamino, n-butylamino, isobutylamino, n-pentylamino, n-hexylamino, dimethylamino, diethylamino, dipropylamino, or the like.

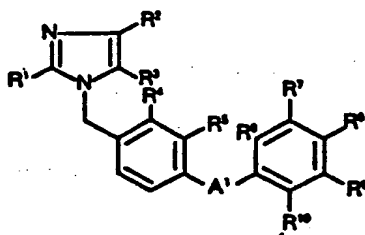
The perfluoroalkyl group having 1 to 6 carbon atoms refers to an alkyl group wherein hydrogen atoms in a straight or branched alkyl group having 1 to 6 carbon atoms are all substituted with fluorine atoms and is shown by, for example, formulae: CF_3 , CF_2CF_3 , $CF_2CF_2CF_3$, $CF(CF_3)_2$, $CF_2CF_2CF_2CF_3$, $CF_2CF(CF_3)_2$, $CF_2CF_2CF_2CF_2CF_3$, $CF_2CF_2CF_2CF_2CF_3$ or $CF_2CF_2CF(CF_3)_2$, or the like.

The alkyl group having 1 to 4 carbon atoms refers to a straight or branched alkyl group having 1 to 4 carbon atoms, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, or the like.

The alkoxycarbonyl group having 2 to 5 carbon atoms refers to an alkyl ester having 2 to 5 carbon atoms, for example, methoxycarbonyl group, ethoxycarbonyl group, n-propoxycarbonyl group, isopropoxycarbonyl group, n-butoxycarbonyl group, isobutoxycarbonyl group, tert-butoxycarbonyl group, or the like.

As the pharmaceutically acceptable non-toxic salts of the non-peptide type compounds for the prevention or treatment of hyperuricemia having an angiotensin II receptor-antagonizing activity, any salts may be used as long as they are acceptable as drugs. Examples of the salts include salts with inorganic or organic bases such as ammonium salt, sodium salt, potassium salt, magnesium salt, triethylamine salt, dicyclohexylamine salt, N-methylglucamine salt, or the like; salts with amino acids such as arginine, lysine, or the like; salts with inorganic or organic acids such as hydrochloride, hydrobromide, sulfate, phosphate, methanesulfonate, toluenesulfonate, maleate, fumarate, camphorsulfonate, or the like.

Next, preferred examples of the non-peptide type compounds having an angiotensin II receptor-antagonizing activity in accordance with the present invention are shown in Tables 1 through 10.



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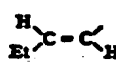
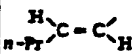
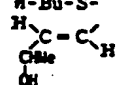
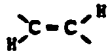
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No.	R'	R'	R'	R'	R'	A'	R'	R'	R'	R'	R''
1	n-Bu	Cl	CH ₂ CO ₂ Me	H	H	-NHCO-	CO ₂ Na	H	H	H	H
2	"	"	(CH ₂) ₃ CO ₂ Me	"	"	"	CO ₂ H	"	"	"	"
3	"	"	CH ₂ CO ₂ Me	"	"	"	-NSO ₂ CF ₃ Na	"	"	"	"
4	"	"	CH ₂ CO ₂ H	"	"	single bond	CO ₂ H	"	"	"	"
5	"	"	CO ₂ H	"	"	"	"	"	"	"	"
6	"	"	CHO	"	"	"	"	"	"	"	"
7	Et-CH=CH	"	CH ₂ OH	"	"	"	"	"	"	"	"
8	"	"	CHO	"	"	"	"	"	"	"	"
9	n-Bu	"	CH ₂ OH	"	"	"	Tet · K	"	"	"	"
10	"	"	"	"	"	"	CO ₂ H	"	"	"	"
11	"	"	(CH ₂) ₃ CO ₂ H	"	"	"	H	"	"	"	"
12	"	"	CH ₂ OH	"	"	"	"	"	CO ₂ H	"	"
13	"	"	CH ₂ OMe	"	"	"	"	CO ₂ H	H	"	"
14	"	"	CH ₂ OH	"	"	"	CO ₂ H	H	"	"	"
15	"	"	"	"	"	"	CONH ₂	"	"	"	"
16	"	"	(CH ₂) ₃ -Tet	"	"	"	H	"	"	"	"
17	"	"	CH ₂ CO ₂ Na	"	"	-NHCO-	CO ₂ Na	"	"	"	"
18	"	"	CH ₂ CO ₂ Me	"	"	"	"	"	"	"	"
19	$\begin{matrix} H \\ \\ Et-C=C-H \end{matrix}$	"	CH ₂ OH	"	"	single bond	CO ₂ H	"	"	"	"
20	n-Bu	"	"	"	"	-OCH ₂ -	"	"	"	"	"

No.	R'	R'	R'	R'	R'	A'	R'	R'	R'	R'	R'
21	n-Bu	Cl	CH ₂ OH	H	H	-O-	CO ₂ H	H	H	H	H
22	"	"	"	"	"	-S-	"	"	"	"	"
23	"	"	"	"	"	-NH-	"	"	"	"	"
24	"	"	"	"	"	-CO-	"	"	"	"	"
25	"	"	"	"	"	single bond	"	"	"	"	"
26		"	"	"	"	"	"	"	"	"	"
27	n-Pr	"	"	"	"	"	"	"	"	"	"
28	n-Bu	"	"	"	"	"	"	"	"	"	"
29	n-Pen	"	"	"	"	"	"	"	"	"	"
30	Et	"	"	"	"	"	"	"	"	"	"
31		"	"	"	"	"	"	"	"	"	"
32	n-Bu-S-	"	"	"	"	"	"	"	"	"	"
33		"	"	"	"	"	"	"	"	"	"
34	Ph	"	"	"	"	"	"	"	"	"	"
35	CH ₂ OH	"	"	"	"	"	"	"	"	"	"
36	-CH ₂ -F	"	"	"	"	"	"	"	"	"	"
37	n-Bu	"	"	"	"		"	"	"	"	"
38	"	"	"	"	"	-NHCONH-	"	"	"	"	"
39	"	"	"	"	"	single bond	Tet	"	"	"	"
40	"	"	CH ₂ CO ₂ Me	"	"	-NHCO-	Me	"	"	"	"
41	"	"	"	"	"	-NHCH ₂ -	H	"	"	"	"
42	"	"	"	"	"	-NHCO-	CO ₂ H	"	"	"	"
43	"	CH ₂ COOMe	Cl	"	"	"	"	"	"	"	"
44	"	Cl	CH ₂ OMe	"	"	"	"	"	"	"	"
45	"	"	CH ₂ CO ₂ Me	"	"	"	"	F	F	F	F
46	"	"	"	"	"	"	"	H	H	Me	-H

No.	R'	R'	R'	R'	R'	A'	R'	R'	R'	R'	R'
47	n-Bu	Cl	CH ₂ CO ₂ Me	H	H	-NHCO-	CO ₂ H	H	Me	H	H
48	"	"	"	"	"	"	"	"	H	NO ₂	"
49	"	"	"	"	"	"	"	"	NO ₂	H	"
50	"	"	"	"	"	"	"	"	H	"	NO ₂
51	"	"	"	"	"	"	"	"	"	"	OMe
52	"	"	"	"	"	"	"	"	"	"	Me
53	"	"	"	"	"	"	"	Cl	"	"	Cl
54	"	"	CH ₂ OMe	"	"	"	"	"	"	"	"
55	"	"	"	"	"	-NCO- Me	"	"	"	"	"
56	"	"	CH ₂ CO ₂ Me	"	"	-NHCO-	O-CP	H	"	"	H
57	"	"	"	"	"	"	CF ₃ SO ₂ N ^H	"	"	"	"
58	"	"	"	"	"	-NCO- Ph	"	"	"	"	"
59	"	"	"	"	"	-NHCO-	MeSO ₂ N ^H	"	"	"	"
60	"	"	"	"	"	"	CF ₃ SO ₂ N ^H	"	"	Cl	"
61	"	"	"	"	"	"	"	"	"	Br	"
62	"	"	"	"	"	"	"	"	"	I	"
63	"	"	"	"	"	"	"	"	"	Me	"
64	"	"	"	"	"	"	"	Me	"	H	"
65	"	"	"	"	"	"	H	H	NO ₂	"	"
66	"	"	"	"	"	"	"	"	Cl	"	"
67	"	"	"	"	"	"	HO	NO ₂	H	NO ₂	"
68	"	"	CH ₂ OMe	"	"	"	HOS	H	"	H	"
69	"	"	CH ₂ CO ₂ Me	"	"	"	H	CF ₃ SO ₂ N ^H	"	"	"
70	"	"	"	"	"	"	"	H	CF ₃ SO ₂ N ^H	"	"
71	H	H	H	"	"	"	CO ₂ H	"	H	"	"
72	Me	"	"	"	"	"	"	"	"	"	"

No.	R'	R'	R'	R'	R'	A'	R'	R'	R'	R'	R''
73	Et	H	H	H	H	-NHCO-	CO ₂ H	H	H	H	H
74	n-Pr	"	"	"	"	"	"	"	"	"	"
75	n-Bu	"	"	"	"	"	"	"	"	"	"
76	n-Pen	"	"	"	"	"	"	"	"	"	"
77	n-Hex	"	"	"	"	"	"	"	"	"	"
78	n-Hep	"	"	"	"	"	"	"	"	"	"
79	Ph(CH ₂) ₄	"	"	"	"	"	"	"	"	"	"
80	p-MP	"	"	"	"	"	"	"	"	"	"
81	c-Hex	"	"	"	"	"	"	"	"	"	"
82	i-Pr	H	H	"	"	"	"	"	"	"	"
83	Ph(CH ₂) ₄	Cl	CH ₂ OH	"	"	"	"	"	"	"	"
84	H	H	"	"	"	"	"	"	"	"	"
85	n-Bu	Cl	OMe	"	"	-CONH-	"	"	"	"	"
86	"	"	"	"	"	"	"	Me	"	"	"
87	"	"	"	"	"	"	Tet	H	"	"	"
88	"	"	CH ₂ CO ₂ Me	"	"	-NHCO-	CO ₂ H	"	"	"	"
89	"	"	CH ₂ OH	"	"	single bond	H	CO ₂ Me	"	"	"
90	"	"	"	"	"	"	"	CO ₂ H	"	"	"
91	"	"	"	"	"	-OCH ₂ -	"	H	"	"	"
92	"	"	"	"	"	"	CO ₂ H	"	"	"	"
93	n-Pr-S	H	CO ₂ Et	"	"	"	H	"	"	"	"
94	"	"	CH ₂ OH	"	"	"	"	"	"	"	"
95	"	"	"	"	"	"	CO ₂ H	"	"	"	"
96	n-Bu	Cl	"	"	"	-CO-	CO ₂ Me	"	"	"	"
97	"	"	CH ₂ OMe	"	"	"	CO ₂ H	"	"	"	"
98	"	"	CH ₂ OH	"	"	$\begin{array}{c} \text{H} \quad \text{H} \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{CN} \end{array}$	CN	"	"	"	"

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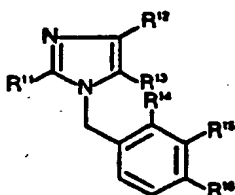
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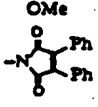
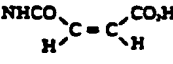
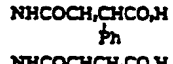





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No.	R'	R'	R'	R'	R'	A'	R'	R'	R'	R'	R'
99	n-Bu	Cl	CH ₂ OH	H	H	$\begin{array}{c} \text{H} \quad \text{H} \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \end{array}$	CO ₂ H	H	H	H	H
100	"	"	CH ₂ OMe	"	"	-NHCONH-	NO ₂	"	"	"	"
101	"	"	"	"	"	"	NH ₂	"	"	"	"
102	"	"	"	"	"	"	CF ₃ SO ₂ N ^H	"	"	"	"
103	"	"	CH ₂ CO ₂ Me	"	"	-NHCO-	CO ₂ H	"	"	"	"
104	"	"	CH ₂ OH	"	"	single bond	H	CO ₂ H	"	"	"
105	"	H	"	"	"	"	"	"	"	"	"
106	"	Cl	CH ₂ CO ₂ Me	"	"	"	"	"	"	"	"
107	"	"	CH ₂ OMe	"	"	"	"	"	"	"	"
108	"	"	CH ₂ OH	"	"	-CO-	CO ₂ H	"	"	"	"
109	"	CH ₂ OH	Cl	"	"	"	"	"	"	"	"
110	"	CH ₂ OCOMe	"	"	"	"	"	"	"	"	"
111	"	Cl	CH ₂ NHCO ₂ Me	"	"	"	"	"	"	"	"
112	"	"	CH ₂ OMe	"	"	"	"	"	"	"	"
113	"	"	CH ₂ OH	"	"	-O-	"	"	"	"	"
114	"	"	"	"	"	-S-	"	"	"	"	"
115	"	H	"	"	"	-OCH ₃ -	"	"	"	"	"
116	"	Cl	CH ₂ OCOMe	"	"	"	"	"	"	"	"
117	"	"	CH ₂ OMe	"	"	"	"	"	"	"	"
118	n-Pr-S	H	CH ₂ OH	"	"	"	"	"	"	"	"
119	EtS	"	"	"	"	"	"	"	"	"	"

TABLE 2



No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
120	n-Bu	Cl	CH ₂ CO ₂ Na	Cl	H	H
121	"	"	"	NO ₂	"	"
122	"	"	"	H	"	CO ₂ Na
123	"	"	CH ₂ CO ₂ H	NO ₂	"	H
124	"	"	CH ₂ CO ₂ Na	NO ₂	"	"
125	"	"	CH ₂ CO ₂ H	H	"	NO ₂
126	"	"	CH ₂ CO ₂ Me	NO ₂	"	H
127	"	"	CH ₂ CO ₂ H	H	"	NH ₂
128	"	"	CH ₂ CO ₂ Na	"	"	CO ₂ Na
129	"	"	"	"	"	H
130	"	"	"	Me	OMe	"
131	"	"	CH ₂ CO ₂ Me	NO ₂	H	"
132	"	"	CH ₂ CO ₂ H	H	"	"
133	"	"	"	Cl	"	"
134	"	"	"	"	"	CO ₂ H
135	"	"	CH ₂ CO ₂ Me	H	"	NH ₂
136	"	"	CH ₂ OMe	"	"	"
137	"	"	CH ₂ OH	"	"	"
138	"	CH ₂ CO ₂ H	Cl	"	"	CO ₂ H
139	"	Cl	CH ₂ OH	"	"	"
140	"	CH ₂ OH	Cl	"	"	"

No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
141	n-Bu	Cl	CH ₂ CO ₂ Me	H	H	CO ₂ H
142	"	"	CH ₂ CO ₂ H	"	"	CH ₂ CO ₂ H
143	"	"	CH ₂ COOMe	"	"	NO ₂
144	"	"	CH ₂ CO ₂ H	"	"	CHO
145	"	"	"	"	"	CH = NOH
146	"	"	"	"	"	OMe
147	"	"	CH ₂ COOMe	"	"	
148	"	"	"	"	"	NHCO(CH ₂) ₃ CO ₂ H
149	"	"	"	"	"	NHCO(CH ₂) ₃ CO ₂ H
150	"	"	"	"	"	
151	"	"	CH ₂ OCH ₃	"	"	NHCOCH ₂ CH ₂ CO ₂ H
152	"	"	"	"	"	
153	"	"	CH ₂ CO ₂ Me	"	"	
154	"	"	"	"	"	
155	"	"	"	"	"	NHSO ₂ CF ₃
156	"	"	"	"	"	NHCOCF ₃
157	"	"	-CH ₂ -Tet	"	"	-CH ₂ -Tet
158	"	"	CH ₂ CO ₂ Me	"	"	
159	"	"	CH ₂ CO ₂ H	"	CO ₂ H	H
160	"	"	"	CO ₂ H	H	"
161	"	"	CH ₂ -Tet	H	CH ₂ -Tet	"
162	"	"	CH ₂ CO ₂ Me		H	"
163	"	"	"		"	"

No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
164	n-Bu	Cl	OMe	H	H	CO-L-Phe
165	"	"	"	"	"	CO-D-Phe
166	"	"	"	"	"	CO-L-Pro
167	"	"	"	"	"	-CO-D-Pro
168	"	"	CH ₂ OH	"	"	NO ₂
169	"	"	"	"	NO ₂	H
170	"	"	"	NO ₂	H	"
171	"	"	"	H	"	CN
172	"	"	"	"	CN	H
173	"	"	"	CN	H	"
174	"	CH ₂ OH	Cl	H	"	NO ₂
175	"	"	"	"	NO ₂	H
176	"	"	"	NO ₂	H	"
177	"	"	"	H	"	CN
178	"	"	"	"	CN	H
179	"	"	"	CN	H	"
180	"	"	"	H	"	CHO
181	"	"	"	"	"	OMe
182	"	Cl	CH ₂ CN	"	"	NO ₂
183	"	"	"	"	NO ₂	H
184	"	"	"	NO ₂	H	"
185	"	"	"	H	"	CN
186	"	"	"	"	CN	H

No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
187	n-Bu	Cl	CH ₂ COOH	H	H	NO ₂
188	"	"	"	"	NO ₂	H
189	"	"	"	NO ₂	H	"
190	"	"	CH ₂ OMe	H	"	NO ₂
191	"	"	CH ₂ CO ₂ Me	"	NO ₂	H
192	"	"	"	NH ₂	H	"
193	"	"	CH ₂ OCH ₃	H	"	NHMe
194	"	"	CH ₂ CO ₂ Me	-NHCOC(=C-CO ₂ H) Ph Ph	"	H
195	"	"	"	H	-NHCOC(=C-CO ₂ H) Ph Ph	"
196	"	"	"	"	H	-NHCOC(=C-CO ₂ H) Ph Ph
197	"	"	CH ₂ OMe	-NHCOC(=C-CO ₂ H) Ph Ph	"	H
198	"	"	"	H	-NHCOC(=C-CO ₂ H) Ph Ph	"
199	"	"	"	"	H	-NHCOC(=C-CO ₂ H) Ph Ph
200	HS	H	CH ₂ OH	"	"	NO ₂
201	H	"	"	"	"	"
202	n-Bu	Cl	CH ₂ OMe	"	"	CO ₂ Me
203	"	"	"	"	"	CO ₂ H
204	Et	"	CH ₂ CO ₂ H	"	"	H
205	(-)-Pr	"	"	"	"	"
206	n-Bu	"	"	"	"	"
207	"	"	"	Cl	"	"
208	"	"	"	NO ₂	"	"
209	n-Pr	"	"	H	"	"

No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
210	<i>i</i> -Bu	Cl	CH ₂ CO ₂ H	H	H	H
211	<i>n</i> -Pen	"	"	"	"	"
212	"	"	"	Cl	"	"
213	<i>n</i> -Hex	"	"	"	"	"
214	<i>c</i> -Pen	"	"	H	"	"
215	<i>c</i> -Hex	"	"	"	"	"
216	<i>n</i> -Bu	"	"	"	"	<i>n</i> -Bu-O
217	Ph-	"	"	Cl	"	H
218	"	"	"	H	"	<i>n</i> -Bu-O
219	<i>n</i> -Bu	"	"	Cl	Me	H
220	"	"	"	H	"	MeO
221	<i>n</i> -Hex	"	"	"	"	"
222	Ph	"	"	"	"	EtO
223	<i>n</i> -Bu	"	"	"	"	MeO
224	<i>n</i> -Hex	"	"	"	"	"
225	Ph	"	"	"	"	HO
226	"	"	"	"	H	"
227	"	"	"	"	Me	MeCOO
228	"	"	"	"	"	<i>n</i> -Bu-O
229	"	"	"	"	"	MeO
230	"	"	"	MeO	H	H
231	"	"	"	H	MeO	"
232	"	"	"	"	H	MeO
233	"	"	"	"	"	EtO

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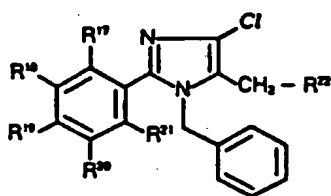
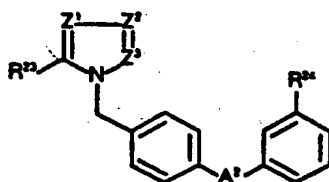
No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
234	Ph	Cl	CH ₂ CO ₂ H	H	H	n-Bu-O
235	"	"	"	"	"	PhCH ₂ O
236	"	"	"	"	MeO	MeO
237	"	"	"	"	Me	"
238	Me	"	"	"	H	H
239	n-Bu	"	CH ₂ CONH ₂	"	"	"
240	"	CH ₂ COOH	Cl	Cl	"	"
241	Ph	Cl	CH ₂ CO ₂ H	H	"	Me
242	"	"	"	Me	"	H
243	"	"	"	H	"	Cl
244	"	"	"	Cl	"	H
245	"	"	"	"	"	Cl
246	"	"	"	Br	"	"
247	"	"	"	F	"	"
248	"	Cl	"	H	"	"
249	"	Br	"	"	"	"
250		Cl	"	"	"	"
251	Ph	"	CH ₂ CO ₂ Et	"	"	"
252	"	"	CH ₂ CO ₂ H	"	"	NH ₂
253	"	CH ₂ CO ₂ H	Cl	"	"	H
254	"	Cl	CO ₂ H	"	"	"
255	"	"	(CH ₂) ₂ CO ₂ H	"	"	"
256	c-Pen	CH ₂ CO ₂ H	Cl	"	"	"
257	Ph	Cl	CH ₂ CONH ₂	"	"	"

TABLE 3



No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
258	H	H	Me	H	H	CO ₂ H
259	"	"	MeO	"	"	"
260	"	"	n-BuNH	"	"	"
261	NO ₂	"	H	"	"	"
262	H	"	NH ₂	"	"	"
263	NH ₂	"	H	"	"	"
264	H	"	HO	"	"	"
265	"	HO	H	"	"	"
266	HO	H	"	"	"	"
267	H	NO ₂	Me ₂ N	"	"	"
268	"	"	"	NO ₂	"	"
269	"	"	Cl	"	"	"
270	"	H	Me ₂ N	H	"	"
271	"	MeO	H	"	"	"
272	"	H	n-BuO	"	"	"
273	"	"	t-Pr	"	"	"
274	"	"	Me ₂ N	"	"	CONH ₂
275	"	Cl	Et ₂ N	"	"	CO ₂ H
276	"	"	Me ₂ N	"	"	"
277	"	Br	"	"	"	"
278	"	HO	HO	"	"	"

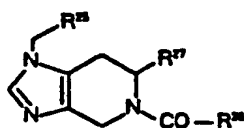
No.	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
279	H	MeO	H	H	H	CO ₂ H
280	"	"	HO	"	"	"
281	"	"	MeO	"	"	"
282	"	Me	"	"	"	"
283	"	MeO	PhCH ₂ O	"	"	"



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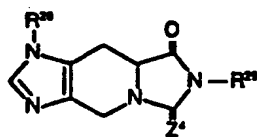
No.	R ²³	Z ¹	Z ²	Z ³	A ²	R ²⁴
284	H	C-η-Bu	N	N	single bond	CO ₂ H
285	η-Bu	CH	"	"	"	"
286	"	"	"	"	"	Tet
287	H	C-η-Bu	"	"	"	"
288	"	C-Et	"	"	"	CO ₂ H
289	Et	CH	"	"	"	"
290	H	C-η-Pr	"	"	"	"
291	η-Pr	"	"	"	"	"
292	H	C-η-Pen	"	"	-CO-	"
293	η-Pen	CH	"	"	"	"
294	η-Bu	N	"	C-CH ₂ OMe	single bond	"
295	"	"	"	CH	"	"
296	η-Pr	"	"	C-CH ₂ OMe	"	"
297	Et	"	"	"	"	"
298	η-Bu	"	"	C-η-Bu	"	"
299	η-Pr	"	"	C-CH ₂ OMe	"	"
300	CH ₂ OMe	CH	C-η-Bu	N	"	"
301	η-Bu	"	C-CH ₂ OMe	"	"	"
302	-(CH ₂) ₂ CH = CH ₂	"	"	"	"	"
303	η-Pr	"	"	"	"	"
304	CH ₂ OMe	"	C-η-Pr	"	"	"
305	η-Pr	CH	C-COOH	N	single bond	CO ₂ H
306	"	"	C-CH ₂ OH	"	"	"
307	CH ₂ OH	"	C-η-Pr	"	"	"
308	η-Pr	"	C-CHO	"	"	"
309	CHO	"	C-η-Pr	"	"	"
310	η-Pr	"	CH	C-CO ₂ Et	"	Tet
311	"	"	"	"	"	CO ₂ H
312	"	"	"	C-CO ₂ H	"	"
313	"	"	"	C-CHO	"	"
314	η-Bu	"	"	C-CO ₂ Et	"	Tet
315	"	"	"	C-CO ₂ H	"	"
316	η-Pr	"	"	C-CHO	"	"

TABLE 5



No.	R ²⁵	R ²⁷	R ²⁸
317	Ph	CHPh ₂	CO ₂ H
318	"	CH(-C ₆ H ₄ -Cl) ₂	"
319	"		"
320		CHPh ₂	"
321	Ph		CH ₂ OH
322		CH ₂ Ph ₂	CO ₂ H
323		"	"
324	-CH ₂ -C-Hex	"	"
325		"	"
326		"	CH ₂ OH
327		"	CO ₂ H
328			"
329	"	CH ₂ -c-Hex	"
330	"	CHPh ₂	"
331	"	CH(-C ₆ H ₄ -Me) ₂	"
332	CH ₂ Ph	CHPh ₂	"
333	Ph	CH(-C ₆ H ₄ -F) ₂	"

TABLE 6



No.	R ²⁰	R ²¹	Z ¹
334	H		O
335	"		"
336	"		"
337	"	<i>i</i> -Pr	"
338	"	<i>i</i> -Bu	"
339	"	<i>i</i> -Pr	S
340	"	Pr	"
341	"		"
342	"		"
343	CH ₂ Ph	<i>i</i> -Pr	O
344	"		S
345	"	"	O
346		"	S
347	"	"	O

compound 348

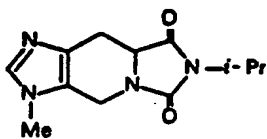
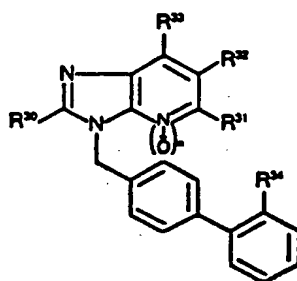







TABLE 7



No.	R ^a	R ^b	R ^c	R ^d	R ^e	n
349	n-Bu	H	H	H	CO ₂ H	0
350	"	"	"	"	Tet	"
351	n-Pr	"	"	"	"	"
352	"	"	"	Me	"	"
353	n-Bu	"	"	"	"	"
354	Et	Me	"	"	"	"
355	n-Pr	"	"	"	"	"
356	n-Bu	"	"	"	"	"
357	Et	"	"	"	CO ₂ H	"
358	n-Pr	NH ₂	"	H	Tet	"
359	Et	H	"	Me	"	"
360	Me	"	"	"	"	"
361	n-Pen	"	"	"	"	"
362	n-Non	"	"	"	"	"
363	i-Pr	"	"	"	"	"
364	i-Bu	"	"	"	"	"
365	c-Pr	"	"	"	"	"
366	MeOCH ₂	"	"	"	"	"
367	n-Pr	"	"	"	CO ₂ H	"
368	"	"	"	"	CONHSO ₂ Ph	"

No.	R ^a	R ^b	R ^c	R ^d	R ^e	n
369	n-Pr	H	H	Me	CONHSO ₂ -  -Cl	0
370	"	"	"	"	CONHSO ₂ Me	"
371	c-Pr	Me	"	"	Tet	"
372	"	"	n-Pr	"	"	"
373	n-Pr	H	H	"	CONHSO ₂ CF ₃	"
374	Et	Me	"	"	NO ₂	"
375	n-Pr	H	"	"	CH ₃ SO ₂ NHCOMe	"
376	Et	Br	"	"	Tet	"
377	"	Cl	"	"	"	"
378	"	CN	"	"	"	"
379	"	CO ₂ H	"	"	"	"
380	"	CO ₂ Et	"	"	"	"
381	"	CO ₂ Me	"	"	"	"
382	"	CO ₂ CH ₂ Ph	"	"	"	"
383	"	CO ₂ i-Pr	"	"	"	"
384	"	CO ₂ n-Bu	"	"	"	"
385	"	CONH ₂	"	"	"	"
386	"		"	"	"	"
387	"	i-Pr	"	"	"	"
388	"	Et	"	"	"	"
389	"	n-Hex	"	"	"	"
390	"	Ph	"	"	"	"
391	"	Tet	"	"	"	"
392	"	COMe	"	"	"	"
393	"	MeCHOH-(RS)	"	"	"	"
394	"	CH ₂ OH	"	"	"	"

No.	R ^a	R ^b	R ^c	R ^d	R ^e	n
395	Et	CH ₂ CH(OH)Me	H	Me	Tet	0
396	"	C(OH)Et ₂	"	"	"	"
397	"	NH ₂	"	"	"	"
398	"	"	"	CF ₃	"	"
399	"	NHMe	"	Me	"	"
400	"	NHMe ₂	"	"	"	"
401	n-Pr	"	"	H	"	"
402	Et	NHn-Hex	"	Me	"	"
403	"	NH(CH ₂) ₄ NH ₂	"	"	"	"
404	"	CH ₂ CO ₂ H	"	"	"	"
405	"		"	"	"	"
406	"	SMe	"	"	"	"
407	"	OH	"	"	"	"
408	"	OEt	"	"	"	"
409	"	(CH ₂) ₄ NHCOMe	"	"	"	"
410	"	Me	"	H	"	"
411	n-Pr	"	"	"	"	"
412	"	"	Me	"	"	"
413	"	H	Br	Me	"	"
414	"	"	H	Et	"	"
415	"	"	"	i-Pr	"	"
416	Et	"	"	Et	"	"
417	n-Pr	"	CH ₂ OH	Me	"	"
418	"	"	H		"	"
419	"	"		Me	"	"
420	"	Cl	H	H	"	"



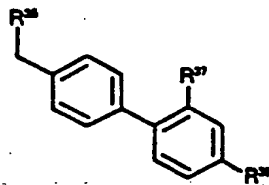
No.	R ^a	R ^b	R ^c	R ^d	R ^e	n
421	n-Pr	Me	NH ₂	Me	Tei	0
422	"	H	H	"	"	1
423	"	Me	OH	"	"	0
424		"	H	"	"	"
425	HC=CH(CH ₃) ₂	"	"	"	"	"
426	Me	"	"	"	"	"
427	Et	"	"	Cl	"	"
428	"	"	"		"	"
429	"	"	"	NHMe	"	"
430	"	"	"	NMe ₂	"	"
431	"	"	"	SMe	"	"
432	"	CH ₂ OCOMe	"	Me	"	"

TABLE 8



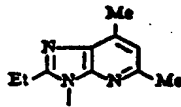
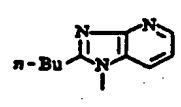
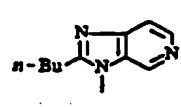
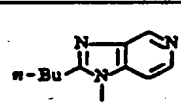
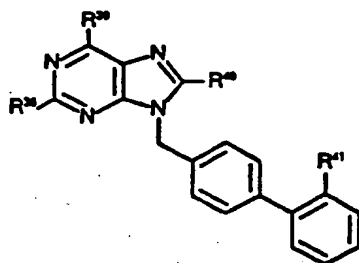

No.	R ²⁶	R ²⁷	R ²⁸
433		Cl	Tet
434	"	F	"
435		H	CO ₂ H
436		"	"
437		"	"

TABLE 9



No.	R ³⁰	R ³¹	R ³²	R ⁴¹
438	H	Cl	n-Pr	CO ₂ H
439	"	"	n-Bu	"
440	"	H	"	"
441	"	Cl	n-Pr	Tol
442	"	H	"	"
443	"	Cl	n-Bu	"
444	"	H	"	"
445	Cl	Me	n-Pr	"
446	Me ₂ N	"	"	"
447	MeNH	"	"	"
448		"	"	"

compound 449

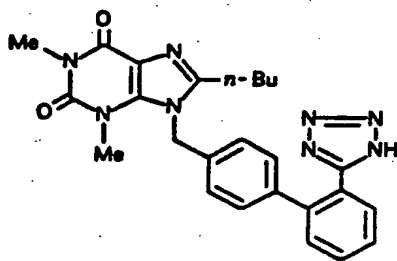
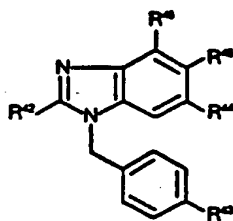


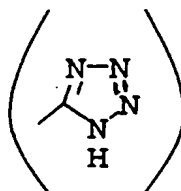
TABLE 10



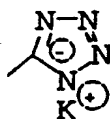
No.	R ²	R ³	R ⁴	R ⁵	R ⁶
450	n-Bu		OMe	H	H
451	"	"	H	OMe	"
452	"	"	CH ₂ OH	H	"
453	"	"	H	CH ₂ OH	"
453	"		"	H	(CH ₃) ₂ CO ₂ Et
454	CH=CHCO ₂ Et	NH ₂	"	"	H
455	"	NO ₂	"	"	"
456	CH=CH-n-Pr	NH ₂	"	"	"
457	"	NO ₂	"	"	"
458	CHO	"	"	"	"
459	(CH ₃) ₂ CO ₂ Et	"	"	"	"
460	(CH ₃) ₂ CO ₂ H	"	"	"	"
461	CH ₂ CH(CO ₂ Et) ₂	"	"	"	"
462	"	NH ₂	"	"	"
463	CH ₂ Cl	NO ₂	"	"	"
463	CH ₂ OH	"	"	"	"
464	n-Bu		"	Cl	"

Abbreviations used in this specification and claims are given below.

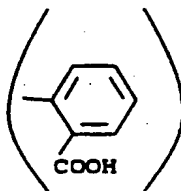
Tet: tetrazol-5-yl



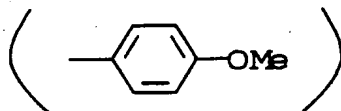
Tet.K: a group shown by formula:



o-CP: 2-carboxyphenyl:



p-MP: 4-methoxyphenyl



Ph: phenyl
 Me: methyl
 Et: ethyl
 n-Pr: n-propyl
 i-Pr: isopropyl
 c-Pr: cyclopropyl
 n-Bu: n-butyl
 i-Bu: isobutyl
 t-Bu: tert-butyl
 n-Pen: n-pentyl

c-Pen: cyclopentyl
 n-Hex: n-hexyl
 c-Hex: cyclohexyl
 n-Non: n-nonyl
 5 L-Pro or D-Pro: L-prolyl or D-prolyl
 L-Phe or D-Phe: L-phenylalanyl or D-phenylalanyl

The symbol " at each column means the same as the description at the column right above.

10 The non-peptide type antitensin II receptor antagonist itself which is used in the present invention can be prepared and obtained by any one of the processes described in publications (a) through (o) and the patents (1) through (12) supra.

Next, the present invention is described more specifically, with reference to test examples.

Test Example: Uric acid excretion activity.

15 Twenty-four (24) male adults (25 to 48 years old, 161 cm to 187 cm tall, weighing 48 kg to 85 kg) were divided into 4 groups, 6 per group. Compound No. 9 was orally administered under hunger in the form of capsules in Example 2, in a definite dose (25 mg, 50 mg, 100 mg or 200 mg) per person, by varying the dose in each group. Further in order to examine influence of diet on uric acid excretion increasing activity of Compound No. 9, the capsule of Example 2 containing 100 mg of Compound No. 9 was orally administered at 2 weeks after the test under hunger was completed. Con-
 20 centration of uric acid in urine and blood was determined by the uricase-POD method at every definite period of time after the administration. The results are shown in Tables 11 through 14.

As is clear from Tables 11 through 14, the concentration of uric acid in serum decreased in 4 hours after medication dose-dependently. However, a tendency that the uric acid concentration was recovered to the concentration level prior to medication was noted 24 hours after. On the other hand, when medicated after meals, the concentration of uric acid in serum was kept as it decreased even 24 hours after.

25 The uric acid concentration in urine dose-dependently increased from 0 to 4 hours by administering Compound no. 9 in doses of 25 mg, 50 mg and 100 mg per person. In the dose of 200 mg, however, the uric acid concentration in urine did not increase dose-dependently but was kept almost constant. On the other hand, when medicated after meals, the uric acid concentration in urine increased in 0 to 8 hours.
 30

The foregoing results reveal that the non-peptide type compounds having an angiotensin II receptor-antagonizing activity in accordance with the present invention have the activities of reducing the uric acid concentration in blood and increasing excretion of uric acid into urine. Accordingly, the non-peptide type compounds having an angiotensin II receptor-antagonizing activity in accordance with the present invention are useful as drugs for the prevention or treat-
 35 ment of hyperuricemia.

40 **Table 11. Change of uric acid concentration in serum with passage of time when administered in hunger**

45

Dose (mg/man) Time(hr)	Concentration of Uric Acid (mg/dl)			
	25	50	100	200
0 (when administered)	5.2 ± 0.5	6.1 ± 1.4	5.9 ± 0.9	5.6 ± 0.7
4	4.8 ± 0.6	5.3 ± 1.3	4.6 ± 0.7	4.3 ± 0.9
24	4.6 ± 0.6	5.6 ± 1.4	5.2 ± 0.8	5.0 ± 0.9

50

55

Table 12. Change in uric acid concentration in serum with passage of time after meal

Time(hr) Dose (mg/man)	Concentration of Uric Acid (mg/hr)
	100
0 (when administered)	5.8 ± 1.1
4	4.9 ± 1.0
24	4.7 ± 0.9

Table 13. Change in uric acid excretion in urine with passage of time when administered in hunger

Time(hr) Dose (mg/man)	Concentration of Uric Acid (mg/hr)			
	25	50	100	200
0 - 4	43.0 ± 24.5	52.8 ± 4.3	81.2 ± 15.7	78.7 ± 15.3
4 - 8	32.4 ± 14.7	42.9 ± 8.5	36.4 ± 7.7	25.4 ± 6.6
8 - 12	28.7 ± 13.6	39.1 ± 4.4	30.1 ± 6.8	19.6 ± 5.2
12 - 24	19.7 ± 9.9	22.2 ± 3.8	19.2 ± 4.2	13.4 ± 2.3
24 - 30	33.2 ± 21.9	26.6 ± 5.4	28.0 ± 7.2	21.0 ± 3.0

Table 14. Change of uric acid excretion in urine with passage of time after meal

Time(hr)	Dose (mg/man)	Concentration of Uric Acid (mg/hr)
		100
0 - 4		75.9 ± 19.0
4 - 8		59.0 ± 3.8
8 - 12		31.8 ± 4.5
12 - 24		18.9 ± 2.5
24 - 30		29.5 ± 4.1

Where the non-peptide type compounds having an angiotensin II receptor-antagonizing activity in accordance with the present invention are used as compositions for the prevention or treatment of hyperuricemia, the non-peptide type compounds having an angiotensin II receptor-antagonizing activity may be used singly or in the form of pharmaceutical compositions comprising the antagonists and pharmaceutically acceptable carriers.

For preparing the pharmaceutical compositions from the compounds of the present invention, inert and pharmaceutically acceptable carriers may be solid or liquid. The composition in the solid form include powders, tablets, dispersible granules, capsules, cachets and suppositories. The solid carrier may be one or more substances which can also act as a diluent, a flavor, a solubilizing agent, a lubricant, a suspending agent, a binder or a tablet disintegrator. The solid carrier may also be an encapsulated substance. In powder, the carrier is a finely divided solid which is mixed with the active compound. In a tablet, the active compound is mixed with a carrier having a required binding property in an appropriate proportion and the resulting mixture is compressed into a desired shape and size. The powder and tablet contain preferably 5 or 10 to about 70% of the active compound. Suitable examples of the solid carrier include magnesium carbonate, magnesium stearate, talc, sugar, lactose, pectin, dextrin, starch, gelatin, colloidal silicon dioxide, tragacanth gum, sodium carboxymethylstarch, methylcellulose, fine crystalline cellulose, sodium carboxymethylcellulose, low melting point wax, cacao butter, etc. The term preparing into pharmaceutical preparations is contemplated to mean a formulation of an encapsulating substance as a carrier in which the active compound (using or without using any other carrier) is surrounded by the carrier and as the result, the carrier gives a capsule together with the active compound, and the inactive compound. Likewise, a cachet also falls under the term. The tablet, powder, cachet and capsule may be used as a solid form of application suited for oral administration.

In preparing a suppository, a low melting point wax such as a mixture of fatty acid glycerides or cacao butter is first allowed to melt and the active compound is uniformly dispersed in the melt by, e.g., stirring. The melted homogeneous mixture is then poured into a mold of suitable size, cooled and solidified.

The preparation of liquid form includes a solution, a suspension and an emulsion. Examples of the liquid carrier are water for parenteral injection or an aqueous propylene glycol solution. The liquid preparation may also be a solution in a polyethylene glycol aqueous solution. The aqueous solution suited for oral application may be prepared by dissolving the active compound in water and, if necessary, adding a suitable coloring agent, a flavor, a stabilizer and a thickener. The aqueous suspension suitable for oral application may be prepared by dispersing the active compound finely divided in water together with a viscous substance, e.g., natural or synthetic rubber, resin, methylcellulose, sodium carboxymethylcellulose and other known suspending agents.

The composition also includes a preparation in a solid form contemplated to be converted into a preparation in a liquid form for oral or parenteral administration just before application. Such a liquid form includes a solution, a suspension and an emulsion. More advantageously, these preparations in a particular solid form may be provided in a single dosage form and used to make a single liquid dosage as it stands. Instead, a sufficient dose of solid may also be provided so as to ensure each liquid dosage in applications several times, by changing to liquid form and then measuring a definite volume of the preparation in a liquid form with a syringe, a teaspoon or other container for determining its vol-

ume, etc. In case that liquid dosages to be applied several times are thus provided, it is preferred to maintain the unused portion of the liquid dosage at a low temperature (for example, under cooling). The preparation in a solid form designed to be converted into a liquid form may contain, in addition to the active compound, a flavor, a coloring agent, a stabilizer, a buffer, an artificial and natural sweetener, a dispersing agent, a thickener, a solubilizing agent, etc. The liquid used to prepare the preparation in a liquid form is water, isotonic water, ethanol, glycerine, propylene glycol, etc. and a mixture thereof. The liquid used is generally chosen in association with mode of application. For example, a liquid preparation containing large quantities of ethanol is inappropriate for parenteral application.

It is preferred that the pharmaceutical preparation may be in a single dosage form. In such a form, the preparation may be divided into a single dose containing a suitable dose of the active compound. The mode of application in a single dose may be a packaged form containing a discontinuous amount of the preparation, for example, a packaged tablet, capsule and powders in a vial or an ampule. The mode of application in a single dose may be a capsule, cachet or a tablet per se or may be a suitable number of any of its packaged forms.

An amount of the active compound in the single dosage of the preparation may be varied or controlled in a range of 0.1 to 500 mg, preferably 1 to 100 mg, depending upon specific application and titer of the active compound. If necessary, the composition may also contain other compatible therapeutic agents.

In the aforesaid therapeutic use, a daily dose range used for a patient weighing 70 kg is 0.1 to 150 mg per 1 kg of body weight, preferably 1 to 100 mg per 1 kg of body weight, in the case of oral administration; in the case of parenteral administration, 0.1 to 50 mg, preferably 0.1 to 20 mg, per 1 kg of body weight. However, the dose may be varied depending upon necessity for patient, condition of disease to be treated and compound to be used.

Determination of an adequate dose for a specific circumstance may be within the skill of a prescriber. In general, treatment is initiated with a dose less than the optimum dose of a compound. Then, the dose is gradually increased until the best effect is achieved under the situation. If necessary for the sake of convenience, a daily dose may be divided and portionwise administered.

The present invention is further described by referring to the following examples but is not deemed to be limited to these examples:

EXAMPLES

EXAMPLE 1 Capsule

Component	Content per Capsule
Compound No. 353	50 mg
Lactose	149 mg
Magnesium stearate	1 mg

Compound No. 353 was prepared into powders having particle size of 60. Lactose and magnesium stearate, which had been similarly passed through blotting paper having a particle size of 60, were added to the powders followed by mixing for 10 minutes. The kneaded mixture was filled up in No. 1 dry gelatin capsule.

EXAMPLE 2 Capsule

Component	Content per Capsule
Compound No. 9	50 mg
Fine crystalline cellulose	115 mg
Lactose	75.5 mg
Magnesium stearate	1.50 mg
Sodium carboxymethyl starch	18.0 mg

Compound No. 9 was prepared into powders having particle size of 60. Fine crystalline cellulose, lactose, magnesium stearate and sodium carboxymethyl starch, which had been similarly passed through blotting paper having a particle size of 60, were added to the powders followed by mixing for 10 minutes. The mixture was filled up in No. 1 dry gelatin capsule. Capsules containing 5 mg or 20 mg of Compound 9 were also prepared in a similar manner.

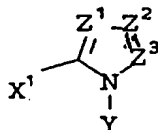
EXAMPLE 3 Capsule

Component	Content per Capsule
Compound No. 9	100 mg
Colloidal silicon dioxide	0.2 mg
Magnesium stearate	5 mg
Fine crystalline cellulose	275 mg
Starch	11 mg
Lactose	98.8 mg

A table was prepared in a conventional manner so as to contain the above components in a dose unit.

Claims

1. The use of a non-peptide type compound having an angiotensin II receptor-antagonizing activity or a pharmaceutically acceptable non-toxic salt thereof for the manufacture of a medicament for the treatment or prevention of hyperuricemia.
2. The use as claimed in claim 1, wherein said non-peptide type compound having an angiotensin II receptor-antagonizing activity is a compound represented by general formula (I) described below or a pharmaceutically acceptable non-toxic salt thereof:



(I)

(wherein each of Z^1 , Z^2 and Z^3 independently represents:

nitrogen,

a group represented by general formula: $=\text{C}(\text{X}^2)-$ or,

a group represented by general formula: $=\text{C}(\text{X}^3)-$; each of X^1 , X^2 and X^3 independently represents:

hydrogen,

hydroxy,

mercapto,

halogen,

formyl,

carboxyl,

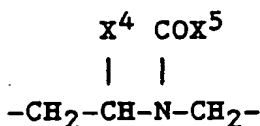
carbamoyl,

methoxycarbonyl,

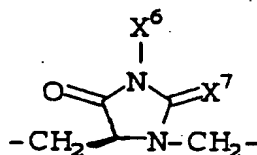
ethoxycarbonyl, an alkyl group having 1 to 10 carbon atoms (wherein said alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, halogen, carboxyl, methoxycarbonyl, ethoxycarbonyl, methoxycarbonylamino, cyano, carbamoyl, acetoxy, acetamido, mercapto, methylthio, ethylthio, phenyl and tetrazolyl),

an alkenyl group having 2 to 5 carbon atoms (wherein said alkenyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, carboxyl, methoxycarbonyl and ethoxycarbonyl), an alkynyl having 2 to 5 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, thienyl, or phenyl (wherein said phenyl may be substituted with 1 to 3 substituents selected from the group consisting of hydroxy, halogen, methoxy, ethoxy, n-propoxy, n-butoxy, mercapto, methylthio, ethylthio, n-propylthio, n-butylthio, methyl, ethyl, n-propyl, isopropyl, n-butyl, nitro, amino, methylamino, dimethylamino, ethylamino, diethylamino, n-propylamino, n-butylamino, phenyl, phenoxy, benzyl, benzyloxy, carboxyl, methoxycarbonyl, ethoxycarbonyl and carbamoyl); when Z^2 and Z^3 represent a group represented by general formula: $=\text{C}(\text{X}^2)-$ or a group represented by general formula: $=\text{C}(\text{X}^3)-$, X^2 and X^3 may be combined together to form:

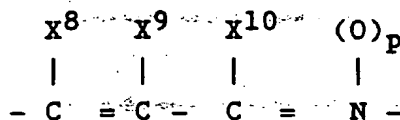
a group represented by general formula:



(wherein X^4 represents carboxyl, carbamoyl, formyl, cyano or hydroxymethyl, and, X^5 represents fluorenyl, phenyl(methyl)amino, cyclopropylmethyl, cyclopentylmethyl, cyclohexylmethyl, cyclohexyl(phenyl)methyl or benzhydryl; (wherein phenyl in said benzhydryl group may be substituted with a substituent selected from the group consisting of halogen, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, amino, methylamino, dimethylamino, ethylamino, diethylamino, methyl and ethyl)); a group represented by general formula:

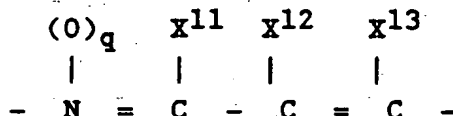


(wherein X^6 represents an alkyl group having 1 to 4 carbon atoms or a phenyl;
 (wherein said phenyl may be substituted with 1 or 2 substituents selected from the group consisting of halogen, methyl, ethyl, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, amino, methylamino, dimethylamino, ethylamino and diethylamino); and X^7 represents oxygen or sulfur); a group represented by general formula:



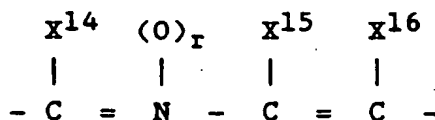
(wherein each of X^8 , X^9 and X^{10} independently represents hydrogen, or alkyl having 1 to 6 carbon atoms);
 (wherein said alkyl group may be substituted with hydroxy, amino, mercapto, methoxy, methylthio, carboxyl, carbamoyl, acetylamino or acetoxyl); an alkoxy carbonyl having 2 to 5 carbon atoms, halogen, cyano, carboxyl, carbamoyl, acetyl, amino, a mono- or dialkylamino group having 1 to 6 carbon atoms which may be substituted with amino, pyrrolidinyl, piperidino, piperazino, morpholino, thiomorpholino, triazolyl, tetrazolyl, trichloromethyl, tribromomethyl, trifluoromethyl or a phenyl (wherein said phenyl may be substituted with a substituent selected from the group consisting of methyl, ethyl, methoxy, ethoxy, hydroxy, methylthio, ethylthio, mercapto, carboxyl, and cyano); and p represents 0 or 1);

a group represented by general formula:



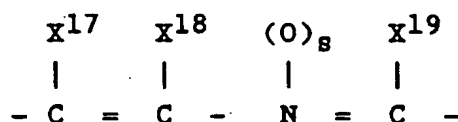
(wherein each of X^{11} , X^{12} and X^{13} independently has the same significance as X^8 , X^9 or X^{10} , and q has the same significance as p);

a group represented by general formula:



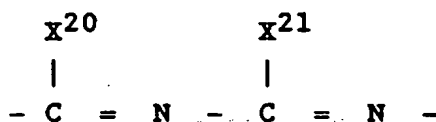
(wherein each of X^{14} , X^{15} and X^{16} independently has the same significance as X^8 , X^9 or X^{10} , and r has the same significance as p);

a group represented by general formula:



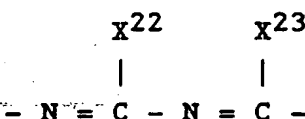
(wherein each of X^{17} , X^{18} and X^{19} independently has the same significance as X^8 , X^9 or X^{10} , and s has the same significance as p);

a group represented by general formula:



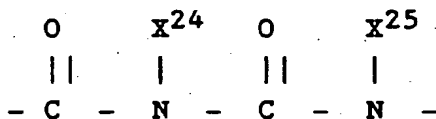
(wherein each of X^{20} and X^{21} independently has the same significance as X^8 , X^9 or X^{10});

a group represented by general formula:



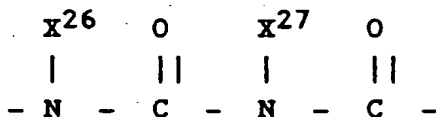
(wherein each of X^{22} and X^{23} independently has the same significance as X^8 , X^9 or X^{10});

a group represented by general formula:



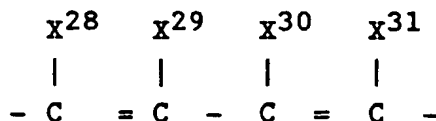
(wherein each of X^{24} and X^{25} independently represents hydrogen or an alkyl group having 1 to 4 carbon atoms (wherein said alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, methoxycarbonyl, carboxyl, ethoxycarbonyl and carbamoyl));

a group represented by general formula:



(wherein each of X^{26} and X^{27} independently has the same significance as X^{24} or X^{25}); or,

a group represented by general formula:



(wherein each of X^{28} , X^{29} , X^{30} and X^{31} independently represents hydrogen, an alkyl group having 1 to 4 carbon atoms (wherein said alkyl group may be substituted with a substituent selected from the group consisting of hydroxy, methoxy, ethoxy, carboxyl, methoxycarbonyl, ethoxycarbonyl, carbamoyl, acetyl, acetoxyl, acetaminyl and halogen), a halogen, a perfluoroalkyl group having 1 to 6 carbon atoms, carboxyl, carbamoyl, cyano, formyl, methoxy, ethoxy, propoxy, methoxycarbonyl or ethoxycarbonyl);

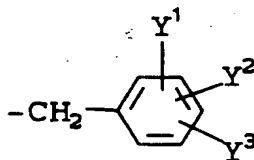
Y represents:

phenethyl,

cyclohexylethyl,

adamantylethyl,

or a group represented by formula:



(wherein each of Y^1 and Y^2 independently represents:

hydrogen,

halogen,

nitro,

carboxyl,

amino,

cyano,

formyl,

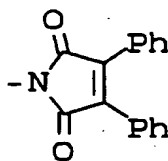
hydroxyiminomethyl,

trifluoromethylsulfonylamino,

trifluoroacetyl amino, an alkoxy group having 1 to 4 carbon atoms, an alkyl group having 1 to 4 carbon atoms,

carboxymethyl, tetrazolylmethyl,

a group represented by formula:



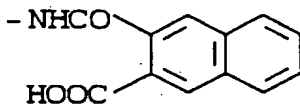
a group represented by formula: $-NHCO(CH_2)_tCOOH$ (wherein t represents 1 to 3);

a group represented by formula: $-NHCOCH=CH-CO_2H$;

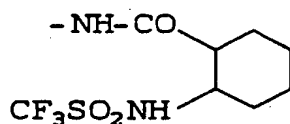
a group represented by formula: $-NHCOCH_2CH(Ph)CO_2H$;

a group represented by formula: $-NHCOCH(Ph)CH_2CO_2H$;

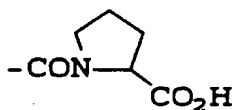
a group represented by formula:



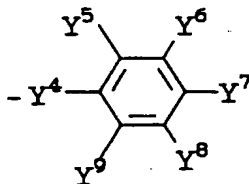
10
a group represented by formula:



20
a group represented by formula: -CONHCH(Ph)CO₂H;
a group represented by formula:



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a group represented by formula: -NHCOC(Ph)=C(Ph)CO₂H;
phthalimido;
benzyloxy;
a mono- or dialkylamino having 1 to 4 carbon
atoms;
acetoxy; or,
propionyloxy;
Y³ represents:
hydrogen; or,
a group represented by general formula:



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(wherein Y⁴ represents a single bond; oxygen atom; sulfur atom; carbonyl group;
a group of formula: -NH-;
a group of formula: -CH = CH-
a group of general formula: -N(Y¹⁰)CO-(wherein Y¹⁰ represents hydrogen, methyl or phenyl);
a group of general formula: -CON(Y¹¹)-(wherein Y¹¹ represents hydrogen, methyl or phenyl);

a group of formula: $-\text{CH}_2\text{NH}-$;

a group of formula: $-\text{NHCH}_2-$;

a group of general formula: $-\text{CH}_2-\text{Y}^{12}-$ (wherein Y^{12} represents oxygen or sulfur);

a group of general formula: $-\text{Y}^{13}-\text{CH}_2-$ (wherein Y^{13} represents oxygen or sulfur); or,

a group of formula: $-\text{NHCONH}-$;

each of Y^5 , Y^6 , Y^7 , Y^8 and Y^9 independently represents an alkyl group having 1 to 4 carbon atoms, halogen, carboxyl, carbamoyl, hydroxy, methoxy, ethoxy, mercapto, methylthio, ethylthio, sulfo, sulfamoyl, nitro, trifluoromethanesulfonylamino, methanesulfonylamino, benzenesulfonylamino, 4-chlorobenzenesulfonylamino, acetaminosulfonylmethyl, methoxycarbonyl, ethoxycarbonyl, propyloxycarbonyl, amino, formyl, phospho, phosphono or cyano)).

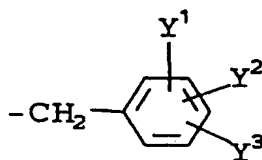
3. The use as claimed in claim 2, wherein:

Z^1 represents nitrogen atom;

Z^2 represents a group represented by general formula: $-\text{C}(\text{X}^2)=$;

Z^3 represents a group represented by general formula: $-\text{C}(\text{X}^3)=$; and,

Y represents a group represented by general formula:



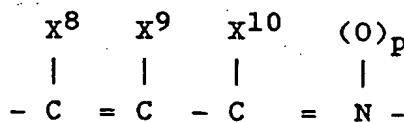
4. The use as claimed in claim 2, wherein:

Z^1 represents nitrogen atom;

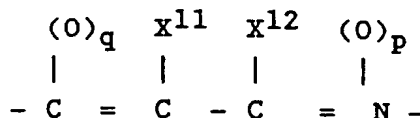
Z^2 represents a group represented by general formula: $-\text{C}(\text{X}^2)=$;

Z^3 represents a group represented by general formula: $-\text{C}(\text{X}^3)-$; and X^2 and X^3 may be combined together to form:

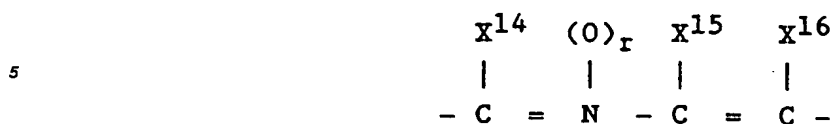
a group represented by general formula:



a group represented by general formula:

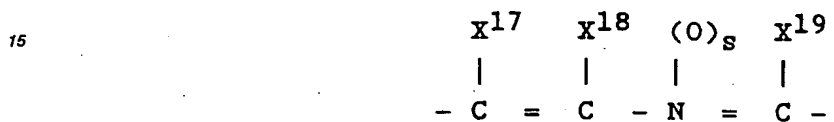


a group represented by general formula:



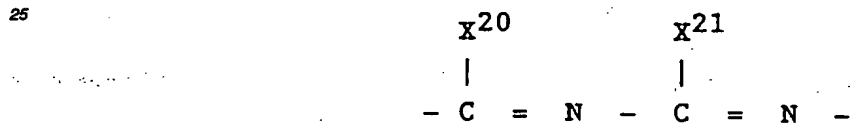
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a group represented by general formula:



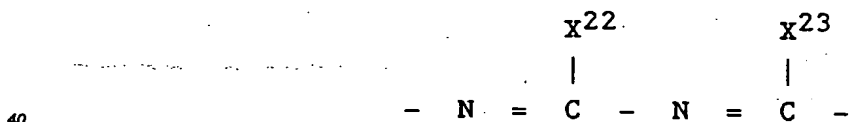
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a group represented by general formula:

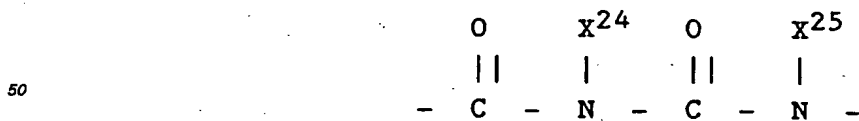


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a group represented by general formula:

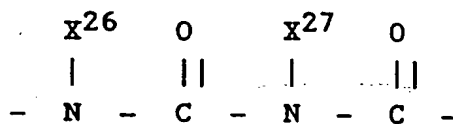


a group represented by general formula: or



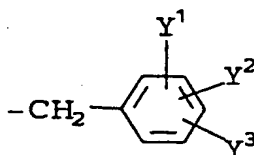
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a group represented by general formula:

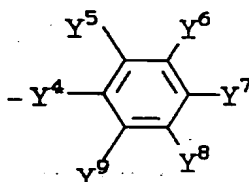


and,

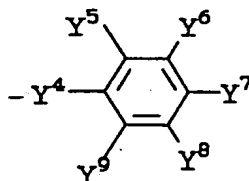
Y represents a group represented by general formula:



5. The use as claimed in claim 3, wherein Y^3 represents a group represented by general formula:



6. The use as claimed in claim 4, wherein Y^3 represents a group represented by general formula:



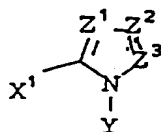
7. The use as claimed in claim 5, wherein Y^4 represents a single bond; and Y^5 represents carboxyl group or tetrazolyl group.

8. The use as claimed in claim 6, wherein Y^4 represents a single bond; and Y^5 represents carboxyl group or tetrazolyl group.

9. The use as claimed in claim 2, wherein the compound of formula I is 2-butyl-4-chloro-5-hydroxymethyl-1-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]imidazole.
10. The use as claimed in claim 2, wherein the compound of formula I is 5,7-dimethyl-2-ethyl-3-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]-3H-imidazo[4,5-b]pyridine.
11. The use as claimed in claim 2, wherein the compound of formula I is 2-butyl-4-chloro-5-hydroxymethyl-1-[(2'carboxybiphenyl-4-yl)methyl]imidazole.
12. The use as claimed in claim 2, wherein the compound of formula I is 5,7-dimethyl-2-ethyl-3-[(2'carboxybiphenyl-4-yl)methyl]-3H-imidazo[4,5-b]pyridine.

Patentansprüche

1. Verwendung einer Nicht-Peptid-Verbindung, die eine angiotensin II-rezeptor-antagonisierende Aktivität aufweist, oder eines pharmazeutisch annehmbaren, nicht-toxischen Salzes davon zur Herstellung eines Medikaments zur Behandlung oder Verhinderung von Hyperurikämie.
2. Verwendung nach Anspruch 1, worin die Nicht-Peptid-Verbindung, die eine angiotensin II-rezeptor-antagonisierende Aktivität aufweist, eine Verbindung ist, welche durch die unten beschriebene allgemeine Formel (I) dargestellt wird, oder ein pharmazeutisch annehmbares, nicht-toxisches Salz davon:



(I)

(worin jedes von Z¹, Z² und Z³ unabhängig bedeutet:

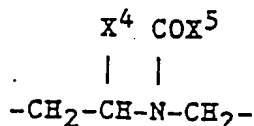
Stickstoff, eine Gruppe, die durch die allgemeine Formel: =C(X²)- dargestellt wird, oder eine Gruppe, die durch die allgemeine Formel: =C(X³)- dargestellt wird;

jedes von X¹, X² und X³ unabhängig bedeutet:

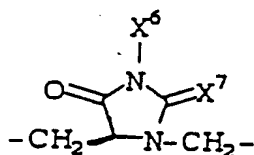
Wasserstoff, Hydroxy, Mercapto, Halogen, Formyl, Carboxyl, Carbamoyl, Methoxycarbonyl, Ethoxycarbonyl, eine Alkylgruppe mit 1 bis 10 Kohlenstoffatomen (worin die Alkylgruppe mit einem Substituenten, der aus der Gruppe aus Hydroxy, Methoxy, Ethoxy, Halogen, Carboxyl, Methoxycarbonyl, Ethoxycarbonyl, Methoxycarbonylamino, Cyano, Carbamoyl, Acetoxy, Acetamido, Mercapto, Methylthio, Ethylthio, Phenyl und Tetrazolyl ausgewählt ist, substituiert sein kann), eine Alkenylgruppe mit 2 bis 5 Kohlenstoffatomen (worin die Alkenylgruppe mit einem Substituenten, der aus der Gruppe aus Hydroxy, Methoxy, Ethoxy, Carboxyl, Methoxycarbonyl und Ethoxycarbonyl ausgewählt ist, substituiert sein kann), eine Alkynylgruppe mit 2 bis 5 Kohlenstoffatomen, eine Cycloalkylgruppe mit 3 bis 6 Kohlenstoffatomen, eine Alkoxygruppe mit 1 bis 4 Kohlenstoffatomen, eine Alkylthiogruppe mit 1 bis 4 Kohlenstoffatomen, Thienyl, oder Phenyl (worin das Phenyl mit 1 bis 3 Substituenten, die aus der Gruppe aus Hydroxy, Halogen, Methoxy, Ethoxy, n-Propoxy, n-Butoxy, Mercapto, Methylthio, Ethylthio, n-Propylthio, n-Butylthio, Methyl, Ethyl, n-Propyl, Isopropyl, n-Butyl, Nitro, Amino, Methylamino, Dimethylamino, Ethylamino, Diethylamino, n-Propylamino, n-Butylamino, Phenyl, Phenoxy, Benzyl, Benzyloxy, Carboxyl, Methoxycarbonyl, Ethoxycarbonyl und Carbamoyl ausgewählt sind, substituiert sein kann);

wenn Z² und Z³ eine Gruppe, die durch die allgemeine Formel: =C(X²)-dargestellt wird, oder eine Gruppe, die durch die allgemeine Formel: =C(X³)-dargestellt wird, bedeuten, X² und X³ miteinander kombiniert werden können, um zu bilden:

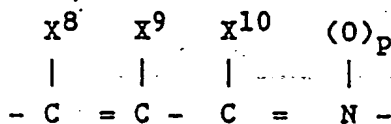
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



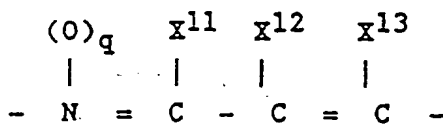
(worin X^4 Carboxyl, Carbamoyl, Formyl, Cyano oder Hydroxymethyl bedeutet, und X^5 Fluorenyl, Phenyl(methyl)amino, Cyclopropylmethyl, Cyclopentylmethyl, Cyclohexylmethyl, Cyclohexyl(phenyl)methyl oder Benzhydryl: (worin Phenyl in der Benzhydrylgruppe mit einem Substituenten, der aus der Gruppe aus Halogen Hydroxy, Methoxy, Ethoxy, Mercapto, Methylthio, Ethylthio, Amino, Methylamino, Dimethylamino, Ethylamino, Diethylamino, Methyl und Ethyl ausgewählt ist, substituiert sein kann) bedeutet);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



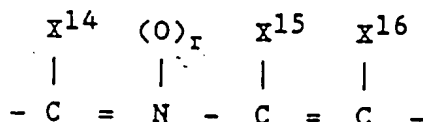
(worin X^6 eine Alkylgruppe mit 1 bis 4 Kohlenstoffatomen oder ein Phenyl: (worin das Phenyl mit 1 oder 2 Substituenten, die aus der Gruppe aus Halogen, Methyl, Ethyl, Hydroxy, Methoxy, Ethoxy, Mercapto, Methylthio, Ethylthio, Amino, Methylamino, Dimethylamino, Ethylamino und Diethylamino ausgewählt sind, substituiert sein kann) bedeutet; und X^7 Sauerstoff oder Schwefel bedeutet);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



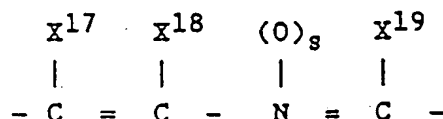
(worin jedes von X^8 , X^9 und X^{10} unabhängig bedeutet Wasserstoff oder Alkyl mit 1 bis 6 Kohlenstoffatomen): (worin die Alkylgruppe substituiert sein kann mit Hydroxy, Amino Mercapto, Methoxy, Methylthio, Carboxyl, Carbamoyl, Acetylamino oder Acetoxy); ein Alkoxy-carbonyl mit 2 bis 5 Kohlenstoffatomen, Halogen, Cyano, Carboxyl, Carbamoyl, Acetyl, Amino, eine Mono- oder Dialkylaminogruppe mit 1 bis 6 Kohlenstoffatomen, welche substituiert sein können mit Amino, Pyrrolidinyl, Piperidino, Piperazino, Morpholino, Thiomorpholino, Triazolyl, Tetrazolyl, Trichlormethyl, Tribrommethyl, Trifluormethyl oder einem Phenyl (worin das Phenyl mit einem Substituenten, der aus der Gruppe aus Methyl, Ethyl, Methoxy, Ethoxy, Hydroxy, Methylthio, Ethylthio, Mercapto, Carboxyl und Cyano ausgewählt ist, substituiert sein kann); und p 0 oder 1 bedeutet);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



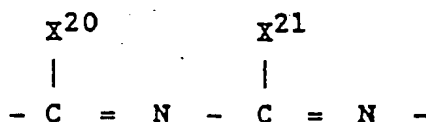
(worin jedes von X^{11} , X^{12} und X^{13} unabhängig dieselbe Bedeutung hat wie X^8 , X^9 oder X^{10} , und q dieselbe Bedeutung hat wie p);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



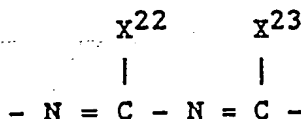
(worin jedes von X^{14} , X^{15} und X^{16} unabhängig dieselbe Bedeutung hat wie X^8 , X^9 oder X^{10} , und r dieselbe Bedeutung hat wie p);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



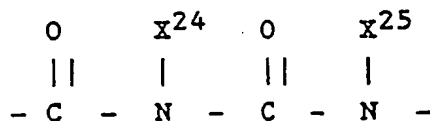
(worin jedes von X^{17} , X^{18} und X^{19} unabhängig dieselbe Bedeutung hat wie X^8 , X^9 oder X^{10} , und s dieselbe Bedeutung hat wie p);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



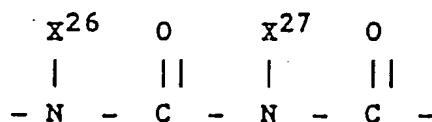
(worin jedes von X^{20} und X^{21} unabhängig dieselbe Bedeutung hat wie X^8 , X^9 oder X^{10});
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



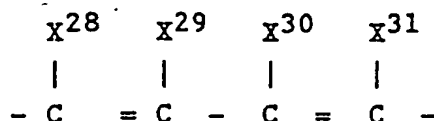
(worin jedes von X^{22} und X^{23} unabhängig dieselbe Bedeutung hat wie X^8 , X^9 oder X^{10});
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



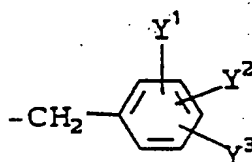
(worin jedes von X^{24} und X^{25} unabhängig Wasserstoff oder eine Alkylgruppe mit 1 bis 4 Kohlenstoffatomen (worin die Alkylgruppe mit einem Substituenten, der aus der Gruppe aus Hydroxy, Methoxy, Ethoxy, Methoxycarbonyl, Carboxyl, Ethoxycarbonyl und Carbamoyl ausgewählt ist, substituiert sein kann) bedeutet);
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



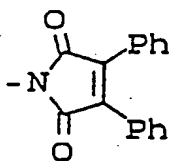
(worin jedes von X^{26} und X^{27} unabhängig dieselbe Bedeutung hat wie X^{24} oder X^{25} ;
oder eine Gruppe, die dargestellt wird durch die allgemeine Formel:



(worin jedes von X^{28} , X^{29} , X^{30} und X^{31} unabhängig Wasserstoff, eine Alkylgruppe mit 1 bis 4 Kohlenstoffatomen (worin die Alkylgruppe mit einem Substituenten, der aus der Gruppe aus Hydroxy, Methoxy, Ethoxy, Carboxyl, Methoxycarbonyl, Ethoxycarbonyl, Carbamoyl, Acetyl, Acetoxy, Acetylamino und Halogen ausgewählt ist, substituiert sein kann), ein Halogen, eine Perfluoralkylgruppe mit 1 bis 6 Kohlenstoffatomen, Carboxyl, Carbamoyl, Cyano, Formyl, Methoxy, Ethoxy, Propoxy, Methoxycarbonyl oder Ethoxycarbonyl bedeutet); Y bedeutet:
Phenethyl, Cyclohexylethyl, Adamantylethyl, oder eine Gruppe, die dargestellt wird durch die Formel:



(worin jedes von Y^1 und Y^2 unabhängig bedeutet: Wasserstoff, Halogen, Nitro, Carboxyl, Amino, Cyano, Formyl, Hydroxyiminomethyl, Trifluormethylsulfonylamino, Trifluoracetylamino, eine Alkoxygruppe mit 1 bis 4 Kohlenstoffatomen, eine Alkylgruppe mit 1 bis 4 Kohlenstoffatomen, Carboxymethyl, Tetrazolymethyl, eine Gruppe, die dargestellt wird durch die Formel:



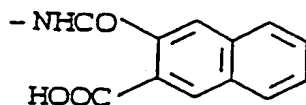
eine Gruppe, die dargestellt wird durch die Formel: $-NHCO(CH_2)_tCOOH$ (worin t 1 bis 3 bedeutet);

eine Gruppe, die dargestellt wird durch die Formel: $-NHCOCH=CH-CO_2H$;

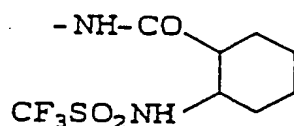
eine Gruppe, die dargestellt wird durch die Formel: $-NHCOCH_2CH(Ph)CO_2H$;

eine Gruppe, die dargestellt wird durch die Formel: $-NHCOCH(Ph)CH_2CO_2H$;

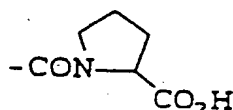
eine Gruppe, die dargestellt wird durch die Formel:



eine Gruppe, die dargestellt wird durch die Formel:

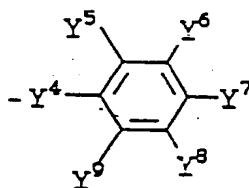


eine Gruppe, die dargestellt wird durch die Formel: $\text{-CONHCH(Ph)CO}_2\text{H}$;
eine Gruppe, die dargestellt wird durch die Formel:



eine Gruppe, die dargestellt wird durch die Formel: $\text{-NHCOC(Ph)=C(Ph)CO}_2\text{H}$; Phthalimido; Benzyloxy; ein Mono- oder Dialkylamino mit 1 bis 4 Kohlenstoffatomen; Acetoxy; oder Propionyloxy;
 Y^3 bedeutet:

Wasserstoff oder eine Gruppe, die dargestellt wird durch die allgemeine Formel:

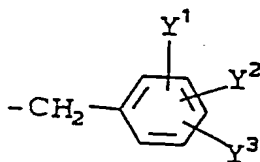


(worin Y^4 bedeutet eine Einfachbindung; ein Sauerstoffatom; Schwefelatom; eine Carbonylgruppe; eine Gruppe der Formel: -NH- ; eine Gruppe der Formel: -CH=CH- ; eine Gruppe der allgemeinen Formel: $\text{-N(Y}^{10})\text{CO-}$ (worin Y^{10} Wasserstoff, Methyl oder Phenyl bedeutet); eine Gruppe der allgemeinen Formel: $\text{-CON(Y}^{11})\text{-}$ (worin Y^{11} Wasserstoff, Methyl oder Phenyl bedeutet); eine Gruppe der Formel: $\text{-CH}_2\text{NH-}$; eine Gruppe der Formel: $\text{-NHCH}_2\text{-}$; eine Gruppe der allgemeinen Formel: $\text{-CH}_2\text{-Y}^{12}\text{-}$ (worin Y^{12} Sauerstoff oder Schwefel bedeutet); eine Gruppe der allgemeinen Formel: $\text{-Y}^{13}\text{-CH}_2\text{-}$ (worin Y^{13} Sauerstoff oder Schwefel bedeutet); oder eine Gruppe der Formel: -NHCONH- ;
jedes von Y^5 , Y^6 , Y^7 , Y^8 und Y^9 unabhängig eine Alkylgruppe mit 1 bis 4 Kohlenstoffatomen, Halogen, Carboxyl, Carbamoyl, Hydroxy, Methoxy, Ethoxy, Mercapto, Methylthio, Ethylthio, Sulfo, Sulfamoyl, Nitro, Trifluormethansulfonylamino, Methansulfonylamino, Benzolsulfonylamino, 4-Chlorbenzolsulfonylamino, Acetylaminosulfonylmethyl, Methoxycarbonyl, Ethoxycarbonyl, Propyloxycarbonyl, Amino, Formyl, Phospho, Phosphono oder Cyano bedeutet).

3. Verwendung nach Anspruch 2, worin:

Z^1 ein Stickstoffatom bedeutet;

Z^2 eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel: $\text{-C(X}^2\text{)=}$; Z^3 eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel: $\text{-C(X}^3\text{)=}$; und Y eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel:



4. Verwendung nach Anspruch 2, worin:

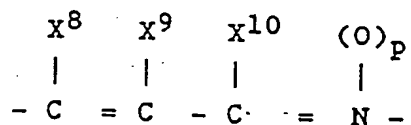
Z¹ ein Stickstoffatom bedeutet;

Z² eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel: -C(X²)=;

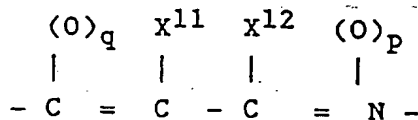
Z³ eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel: -C(X³)=;

und X² und X³ miteinander kombiniert werden können, um zu bilden:

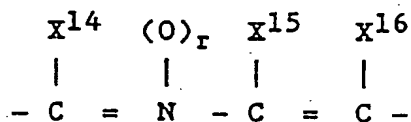
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



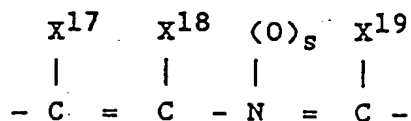
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



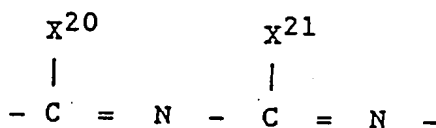
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



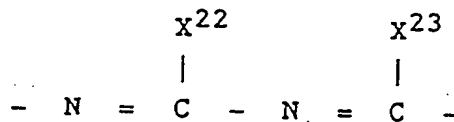
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



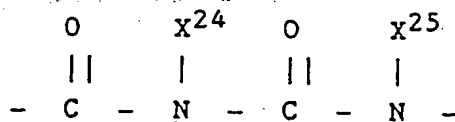
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



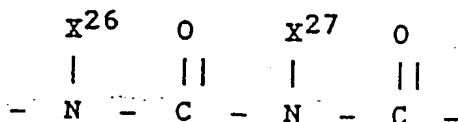
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



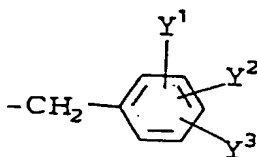
eine Gruppe, die dargestellt wird durch die allgemeine Formel:



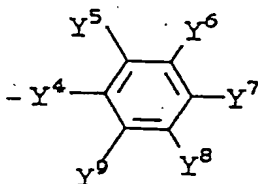
oder eine Gruppe, die dargestellt wird durch die allgemeine Formel:



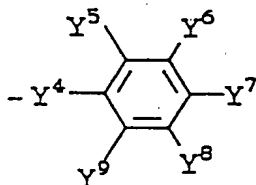
und Y eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel:



5. Verwendung nach Anspruch 3, worin Y³ eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel:



6. Verwendung nach Anspruch 4, worin Y^3 eine Gruppe bedeutet, die dargestellt wird durch die allgemeine Formel:



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7. Verwendung nach Anspruch 5, worin Y^4 eine Einfachbindung darstellt, und Y^5 eine Carboxylgruppe oder Tetrazolylgruppe bedeutet.
8. Verwendung nach Anspruch 6, worin Y^4 eine Einfachbindung darstellt, und Y^5 eine Carboxylgruppe oder Tetrazolylgruppe bedeutet.
9. Verwendung nach Anspruch 2, worin die Verbindung der Formel I 2-Butyl-4-chlor-5-hydroxymethyl-1-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]imidazol ist.
10. Verwendung nach Anspruch 2, worin die Verbindung der Formel I 5,7-Dimethyl-2-ethyl-3-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]-3H-imidazo[4,5-b]pyridin ist.
11. Verwendung nach Anspruch 2, worin die Verbindung der Formel I 2-Butyl-4-chlor-5-hydroxymethyl-1-[(2'carboxybiphenyl-4-yl)methyl]imidazol ist.
12. Verwendung nach Anspruch 2, worin die Verbindung der Formel I 5,7-Dimethyl-2-ethyl-3-[(2'carboxybiphenyl-4-yl)methyl]-3H-imidazo[4,5-b]pyridin ist.

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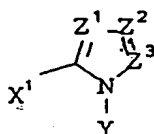
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Revendications

1. Utilisation d'un composé de type non peptidique, ayant une activité d'antagoniste des récepteurs de l'angiotensine-II, ou d'un sel non toxique, pharmaceutiquement acceptable de celui-ci, pour la fabrication d'un médicament destiné au traitement ou à la prévention de l'hyperuricémie.
2. Utilisation selon la revendication 1, dans laquelle ledit composé de type non peptidique, ayant une activité d'antagoniste des récepteurs de l'angiotensine-II, est un composé représenté par la formule générale (I) décrite ci-dessous ou un sel non toxique, pharmaceutiquement acceptable de celui-ci:

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(I)

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formule dans laquelle
chacun des radicaux Z^1 , Z^2 et Z^3 représente indépendamment:

un atome d'azote,
un groupe représenté par la formule générale: $=C(X^2)-$ ou
un groupe représenté par la formule générale: $=C(X^3)-$;

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chacun des radicaux X^1 , X^2 et X^3 représente indépendamment:

un atome d'hydrogène,

le groupe hydroxy,
 le groupe mercapto,
 un atome d'halogène,
 le groupe formyle,
 le groupe carboxy,
 le groupe carbamoyle,
 le groupe méthoxycarbonate,
 le groupe éthoxycarbonate,

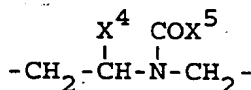
un groupe alkyle ayant de 1 à 10 atomes de carbone (le groupe alkyle pouvant être substitué par un substituant choisi parmi les groupes hydroxy, méthoxy, éthoxy, un atome d'halogène, les groupes carboxy, méthoxycarbonate, éthoxycarbonate, méthoxycarbonylamino, cyano, carbamoyle, acétoxy, acétamido, mercapto, méthylthio, éthylthio, phényle et tétrazolylo),

un groupe alcényle ayant de 2 à 5 atomes de carbone (le groupe alcényle pouvant être substitué par un substituant choisi parmi les groupes hydroxy, méthoxy, éthoxy, carboxy, méthoxycarbonate et éthoxycarbonate),

un groupe alcynyle ayant de 2 à 5 atomes de carbone, cycloalkyle ayant de 3 à 6 atomes de carbone, alcoxy ayant de 1 à 4 atomes de carbone, alkylthio ayant de 1 à 4 atomes de carbone, thiénylo ou phényle (le groupe phényle pouvant être substitué par 1 à 3 substituants choisis parmi des atomes d'halogène et les groupes hydroxy, méthoxy, éthoxy, n-propoxy, n-butoxy, mercapto, méthylthio, éthylthio, n-propylthio, n-butylthio, méthyle, éthyle, n-propyle, isopropyle, n-butyle, nitro, amino, méthylamino, diméthylamino, éthylamino, diéthylamino, n-propylamino, n-butylamino, phényle, phénoxy, benzyle, benzyloxy, carboxy, méthoxycarbonate, éthoxycarbonate et carbamoyle);

lorsque Z^2 et Z^3 représentent un groupe de formule générale: $=C(X^2)-$ ou un groupe de formule générale: $=C(X^3)-$, X^2 et X^3 peuvent être réunis pour former:

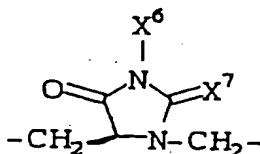
un groupe représenté par la formule générale:



[dans laquelle X^4 représente le groupe carboxy, carbamoyle, formyle, cyano ou hydroxyméthyle, et X^5 représente le groupe fluorényle, phényl(méthyl)amino, cyclopropylméthyle, cyclopentylméthyle, cyclohexylméthyle, cyclohexyl(phényl)méthyle ou benzhydryle,

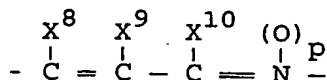
(le fragment phényle dans ledit groupe benzhydryle pouvant porter un substituant choisi parmi un atome d'halogène et les groupes hydroxy, méthoxy, éthoxy, mercapto, méthylthio, éthylthio, amino, méthylamino, diméthylamino, éthylamino, diéthylamino, méthyle et éthyle)];

un groupe représenté par la formule générale:



[dans laquelle X^6 représente un radical alkyle ayant de 1 à 4 atomes de carbone ou phényle,

(le radical phényle pouvant être substitué par 1 ou 2 substituants choisis parmi des atomes d'halogène et les groupes méthyle, éthyle, hydroxy, méthoxy, éthoxy, mercapto, méthylthio, éthylthio, amino, méthylamino, diméthylamino, éthylamino et diéthylamino; et X^7 représente un atome d'oxygène ou un atome de soufre)]; un groupe représenté par la formule générale:

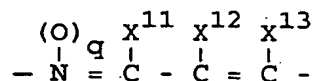


[dans laquelle chacun des radicaux X^8 , X^9 et X^{10} représente indépendamment un atome d'hydrogène ou un groupe alkyle ayant de 1 à 6 atomes de carbone

(le groupe alkyle pouvant être substitué par le groupe hydroxy, amino, mercapto, méthoxy, méthylthio, carboxy, carbamoyle, acétylamino ou acétoxy);

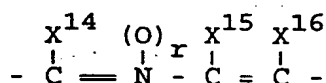
un groupe alcoxycarbonyle ayant de 2 à 5 atomes de carbone, un atome d'halogène, un groupe cyano, carboxy, carbamoyle, acétyle, amino, mono- ou dialkylamino ayant de 1 à 6 atomes de carbone, qui peut être substitué par un groupe amino, pyrrolidinyle, pipéridino, pipérazino, morpholino, thiomorpholino, triazolyle, tétrazolyle, trichlorométhyle, tribromométhyle, trifluorométhyle ou phényle (le groupe phényle pouvant porter un substituant choisi parmi les groupes méthyle, éthyle, méthoxy, éthoxy, hydroxy, méthylthio, éthylthio, mercapto, carboxy et cyano); et p représente 0 ou 1];

un groupe représenté par la formule générale:



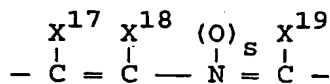
(dans laquelle chacun des radicaux X^{11} , X^{12} et X^{13} a indépendamment la même signification que X^8 , X^9 ou X^{10} , et q a la même signification que p);

un groupe représenté par la formule générale:



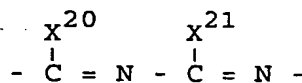
[dans laquelle chacun des radicaux X^{14} , X^{15} et X^{16} a indépendamment la même signification que X^8 , X^9 ou X^{10} , et r a la même signification que p];

un groupe représenté par la formule générale:



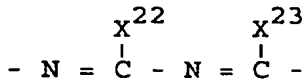
(dans laquelle chacun des radicaux X^{17} , X^{18} et X^{19} a indépendamment la même signification que X^8 , X^9 ou X^{10} , et s a la même signification que p)];

un groupe représenté par la formule générale:



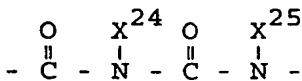
(dans laquelle chacun des radicaux X^{20} et X^{21} a indépendamment la même signification que X^8 , X^9 ou X^{10});

un groupe représenté par la formule générale:



(dans laquelle chacun des radicaux X^{22} et X^{23} a indépendamment la même signification que X^8 , X^9 ou X^{10});

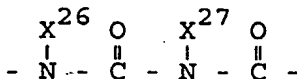
un groupe représenté par la formule générale:



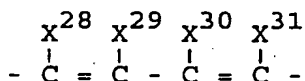
[dans laquelle chacun des radicaux X^{24} et X^{25} représente indépendamment un atome d'hydrogène ou un

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groupe alkyle ayant de 1 à 4 atomes de carbone (ledit groupe alkyle pouvant porter un substituant choisi parmi les groupes hydroxy, méthoxy, éthoxy, méthoxycarbonyle, carboxy, éthoxycarbonyle, et carbamoyle)];
un groupe représenté par la formule générale:



(dans laquelle chacun des radicaux X^{26} et X^{27} a indépendamment la même signification que X^{24} et X^{25}); ou un groupe représenté par la formule générale:



[dans laquelle chacun des radicaux X^{28} , X^{29} , X^{30} et X^{31} représente indépendamment un atome d'hydrogène ou un groupe alkyle ayant de 1 à 4 atomes de carbone (ledit groupe alkyle pouvant porter un substituant choisi parmi les groupes hydroxy, méthoxy, éthoxy, carboxy, méthoxycarbonyle, éthoxycarbonyle, carbamoyle, acétyl, acétoxy, acétamido et un atome d'halogène), un atome d'halogène, un groupe perfluoroalkyle ayant de 1 à 6 atomes de carbone, le groupe carboxy, carbamoyle, cyano, formyle, méthoxy, éthoxy, propoxy, méthoxycarbonyle ou éthoxycarbonyle];

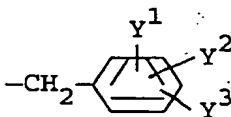
Y représente:

le groupe phénéthyle,

cyclohexyléthyle,

adamantyléthyle,

ou un groupe représenté par la formule générale



(dans laquelle chacun des radicaux Y^1 et Y^2 représente indépendamment:

un atome d'hydrogène,

un atome d'halogène,

le groupe nitro,

carboxy,

amino,

cyano,

formyle,

hydroxyiminométhyle,

trifluorométhylsulfonylamino,

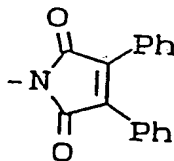
trifluoroacétylamino,

un groupe alcoxy ayant de 1 à 4 atomes de carbone,

un groupe alkyle ayant de 1 à 4 atomes de carbone,

le groupe carboxyméthyle, tétrazolyiméthyle,

un groupe représenté par la formule:



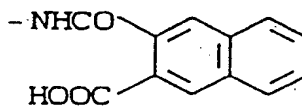
un groupe représenté par la formule: $\text{-NHCO(CH}_2\text{)}_t\text{COOH}$ (dans laquelle t représente 1 à 3),

un groupe représenté par la formule: $\text{-NHCOCH=CH-CO}_2\text{H}$;

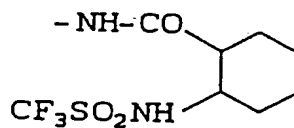
un groupe représenté par la formule: $\text{-NHCOCH}_2\text{CH(Ph)CO}_2\text{H}$;

un groupe représenté par la formule: $\text{-NHCOCH(Ph)CH}_2\text{CO}_2\text{H}$;

un groupe représenté par la formule:

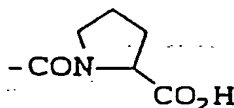


un groupe représenté par la formule:



un groupe représenté par la formule: $\text{-CONHCH(Ph)CO}_2\text{H}$;

un groupe représenté par la formule:



un groupe représenté par la formule: $\text{-NHCOC(Ph)=C(Ph)CO}_2\text{H}$;

le groupe phthalimido,

le groupe benzyloxy,

un groupe mono- ou dialkylamino ayant de 1 à 4 atomes de carbone,

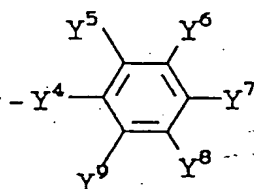
le groupe acétoxy, ou

le groupe propionyloxy;

Y^3 représente:

un atome d'hydrogène ou

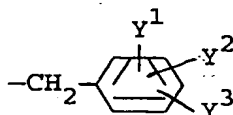
un groupe représenté par la formule générale:



[dans laquelle Y⁴ représente une liaison simple, un atome d'oxygène ou de soufre, ou le groupe carbonyle, un groupe de formule -NH-, un groupe de formule -CH=CH-, un groupe de formule générale -N(Y¹⁰)CO-, (dans laquelle Y¹⁰ représente un atome d'hydrogène ou le groupe méthyle ou phényle), un groupe de formule générale -CON(Y¹¹)- (dans laquelle Y¹¹ représente un atome d'hydrogène ou le groupe méthyle ou phényle), un groupe de formule -CH₂NH-, un groupe de formule -NHCH₂-, un groupe de formule générale -CH₂-Y¹²- (dans laquelle Y¹² représente un atome d'oxygène ou de soufre), un groupe de formule générale -Y¹³-CH₂- (dans laquelle Y¹³ représente un atome d'oxygène ou de soufre), ou un groupe de formule -NHCONH-; chacun des radicaux Y⁵, Y⁶, Y⁷, Y⁸ et Y⁹ représente indépendamment un groupe alkyle ayant de 1 à 4 atomes de carbone, un atome d'halogène, le groupe carboxy, carbamoyle, hydroxy, méthoxy, éthoxy, mercapto, méthylthio, éthylthio, sulfo, sulfamoyle, nitro, trifluorométhanesulfonylamino, méthanesulfonylamino, benzènesulfonylamino, 4-chlorobenzènesulfonylamino, acétylamino, sulfonylméthyle, méthoxycarbonyle, éthoxycarbonyle, propyloxycarbonyle, amino, formyle, phospho, phosphono ou cyano].

3. Utilisation selon la revendication 2, dans laquelle

Z¹ représente un atome d'azote,
Z² représente un groupe de formule générale: -C(X²)=,
Z³ représente un groupe de formule générale: -C(X³)=, et
Y représente un groupe de formule générale:

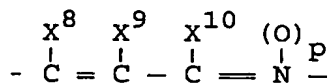


4. Utilisation selon la revendication 2, dans laquelle

Z¹ représente un atome d'azote,
Z² représente un groupe de formule générale: -C(X²)=,
Z³ représente un groupe de formule générale: -C(X³)=, et X² et X³ peuvent être réunis pour former:

un groupe de formule générale:

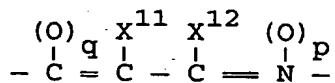
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un groupe de formule générale:

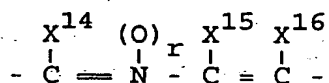
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un groupe de formule générale:

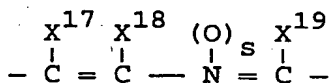
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un groupe de formule générale:

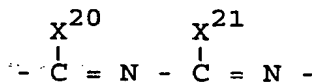
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un groupe de formule générale:

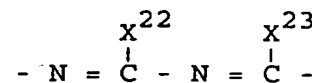
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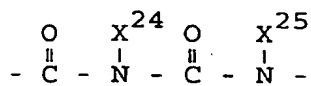
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un groupe de formule générale:

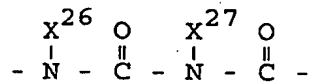
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un groupe de formule générale:

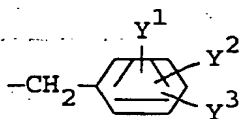


ou un groupe de formule générale:

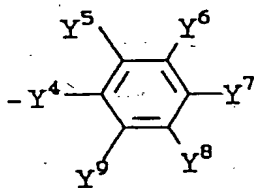


et

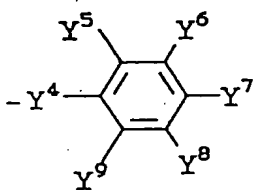
Y représente un groupe de formule générale:



5. Utilisation selon la revendication 3, dans laquelle Y³ représente un groupe de formule générale:



6. Utilisation selon la revendication 4, dans laquelle Y³ représente un groupe de formule générale:



7. Utilisation selon la revendication 5, dans laquelle Y⁴ représente une liaison simple et Y⁵ représente le groupe carboxy ou tétrazolye.

8. Utilisation selon la revendication 6, dans laquelle Y⁴ représente une liaison simple et Y⁵ représente le groupe carboxy ou tétrazolye.

9. Utilisation selon la revendication 2, dans laquelle le composé de formule I est le 2-butyl-4-chloro-5-hydroxyméthyl-1-[(2'-(1H-tétrazol-5-yl)biphényl-4-yl)méthyl]imidazole.
- 5 10. Utilisation selon la revendication 2, dans laquelle le composé de formule I est la 5,7-diméthyl-2-éthyl-3-[(2'-(1H-tétrazol-5-yl)biphényl-4-yl)méthyl]-3H-imidazo[4,5-b]pyridine.
11. Utilisation selon la revendication 2, dans laquelle le composé de formule I est le 2-butyl-4-chloro-5-hydroxyméthyl-1-[(2'-carboxybiphényl-4-yl)méthyl]imidazole.
- 10 12. Utilisation selon la revendication 2, dans laquelle le composé de formule I est la 5,7-diméthyl-2-éthyl-3-[(2'-carboxybiphényl-4-yl)méthyl]-3H-imidazo-[4,5-b]pyridine.

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